

A vintage illustration in a warm, sepia-toned style. A young boy, wearing a straw hat with a red band and a dark shirt, sits on a wooden fence. He is holding a small, white, curly-haired lamb. A young girl, wearing a patterned dress with a red sash, sits on the ground in front of him, smiling and reaching out to touch the lamb. The background shows a rural landscape with trees and a body of water under a hazy sky.

WATKINS

FARM HINTS AND RULES

THE 2 HANDIEST MEDICINES IN THE BARN!

Watkins Liniment Petro Carbo Salve

Watkins Liniment is a good, reliable, general-purpose liniment, good for men, women and children and also for livestock. Buy two bottles of Liniment. Keep one handy for use in the house and the other one in the barn for use on livestock and pets.

Watkins Liniment comes in very handy for muscular sprains of horses, mules and other stock; for muscular lameness in horses; for superficial bruises and superficial sore shoulder, as well as for treating barbwire cuts on stock.

Watkins Liniment is one of the oldest and most widely sold and most favorably known liniment in the world. The assistance which this good, old-fashioned Liniment will give you in times of need is worth many times its cost.



WORLD'S LARGEST SELLING LINIMENT

**Every Minute the
Clock Ticks . . .
8 Bottles of Watkins
Liniment are Bought!**



Watkins Petro-Carbo Salve is a soothing, antiseptic salve for external dressing. For human beings, it makes a valuable first aid in cases of cuts, burns, boils, pimples, scratches, piles, poison ivy, non-toxic insect bites. Children like it because it does not smart or burn.

This excellent salve is also helpful in the treatment of livestock. It is good for the superficial varieties of sores, collar and saddle galls, mange, chafed and chapped teats, shoulder sores and slight bruises and burns.

WATKINS FARM HINTS AND RULES

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THE J. R. WATKINS COMPANY

NEWARK, N. J.

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WINONA, MINN.

OAKLAND, CALIF.

WATKINS

ARM-HINTS

AND RULES

THE L. B. WATKINS COMPANY

CONTENTS

CHAPTER 1	Hints for More Profitable Poultry Raising	Page 5
CHAPTER 2	Hints for More Profitable Hog Raising . . .	Page 13
CHAPTER 3	Hints for More Profitable Livestock Raising	Page 21
	(Dairy and Beef Cattle, Horses and Mules, Sheep and Goats)	
CHAPTER 4	Around The Farm Hints	Page 27
CHAPTER 5	Miscellaneous Hints	Page 43
CHAPTER 6	Rules and Tables	Page 55

FOR YOUR HANDY REFERENCE

Phone No.

Doctor.....

Veterinary.....

County Agent.....

Sheriff.....

Fire Dept.....

.....

.....

Watkins Dealer.....

Phone and Mail Orders Promptly Filled by your Watkins Dealer.
See Name and Address on Back Cover.

KEEP YOUR HENS LAYING and PAYING



Help your chicks develop into high-producing hens by giving them the minerals necessary for proper growth. Watkins Improved Mineral Compound contains vital ingredients necessary for proper growth and development. They provide minerals necessary for higher egg production, aid digestion and help to keep poultry in good condition.

4 Extra Eggs

A YEAR PAYS FOR A YEAR'S SUPPLY OF WATKINS POULTRY MINERAL COMPOUND

A dozen eggs contain about two and one-half ounces of minerals. Therefore, a hen laying 200 eggs a year must be able to get over 40 ounces of minerals. Watkins Improved Poultry Mineral Compound contains the vital ingredients necessary for proper growth, development and egg production. Only three or four extra eggs per bird will pay for a whole year's supply of Watkins Poultry Mineral Compound. It pays to feed Watkins Poultry Mineral Compound from baby chick time on.



CHAPTER I

HINTS FOR MORE PROFITABLE POULTRY RAISING

FEED SAVING HINTS

1. Keep hens from pecking feed out on floor by putting a one-inch lip on edges of mash hoppers.

2. Do not heap hoppers with mash. Put in only about half capacity and refill later. Stimulate faster consumption by stirring mash in hoppers frequently.

3. Be sure all layers have a chance to get enough mash by providing at least three inches of hopper feeding space per bird.

4. Use Watkins Rat Killer and carry on a constant battle to keep the rodents from hen houses.

5. Get rid of non-producing birds as soon as you can identify them.

6. Feed Watkins Mineral Compound for Poultry and use Watkins full line of Poultry Preparations to build resistance and avoid loss. Dead birds cut down the feeding efficiency of the flock as a whole.

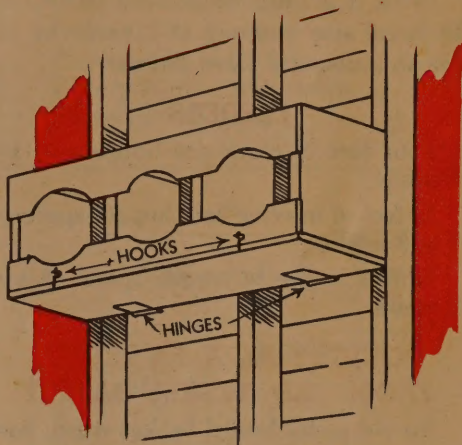
GIVE CHICKS PLENTY OF ROOM

Figure at least one square foot of floor space for each three chicks for starting. If cockerels are removed by sixth week, enough room will be allowed for the growing period of pullets.

Growing birds, after sixth week should have twice the amount of space as same number of starting chicks.

It is a mistake to attempt to brood more than 500 birds under one brooder, regardless of the size of the house.

KWIK-KLEEN POULTRY NEST



The diagram here shows an easily cleaned poultry nest. It is fastened to the wall solidly and cleaned by unfastening the hooks which hold the hinged bottom in place. This drops down when unhooked, dumping the old nesting material and permitting the bottom boards to be scraped off readily.

WHEN TURKEYS OUTGROW ROOSTING SHELTER

Overcrowded roosts cause trouble. As turkey poults grow and crowd each other on the roosts under shelter more space should be provided. It's simple to do this if the roosting shelter itself is the low, comparatively flat-roofed type. Just build roosts on the roof of the shelter—doubling the roosting space.

CHICK NEEDS FOR FEEDING AND WATERING

The minimum requirements for a standard brood of 250 chicks are, not less than a floor space of 10x12 feet, three 2-quart chick waterers and three chick feeders four feet long. Place the waterers around the brooder about 12 inches from the hover. In very cold weather, place them nearer or even under the hover. Place feeders around the hover, also.

Chicks grow rapidly and their requirements grow in proportion. As a general rule, follow this table to take care of needs. This is based on 100 chicks.

WATERERS

One 2-quart waterer . . . First two weeks
Three 2-quart waterers . . . 3 to 8 weeks
Five 2-quart waterers . . . After 8 weeks

Often it is more economical to switch to larger size waterers at 8 weeks or to use an automatic valve waterer.

FEEDERS

Four feet of chick-size hoppers—1 to 4 weeks.

10 feet of intermediate hopper space—4 to 8 weeks.

18 feet large-size hopper space—After 8 weeks.

POULTRY ALFALFA FEEDER FROM OLD BUSHEL BASKET

An old metal bushel basket which has outlived its usefulness, can serve in another way. No use of tossing it in the scrap heap. The picture tells the story. Cut holes in it as shown and put it to work as an alfalfa feeder. A top is easy to make and the basket handy because it can be carried to your alfalfa supply for refilling.



EASILY CLEANED DROPPING PIT



Under war conditions it has been extremely difficult to get wire of any kind and as a result, wire enclosed dropping pits have been out. To overcome that difficulty and construct an easily cleaned dropping pit, try this method.

Make the base, (of the same area as roost section frames) from any handy lumber for a frame, covered with evenly spaced lath. Join the corners with hinges from which the pins can be removed to permit easy dismantling. When joined together, the roost section sits on the frame so made. Thus the roost section can be lifted off the frame and the latter taken down to permit easy cleaning of the floor space.

COMBINATION FEEDING HOPPER

An economical, practically non-wasting feeding trough for use indoors, requiring very low cost materials is easily made by following these directions in connection with the diagram.

The no-waste feature of this hopper is found in the narrow lip along the top side of the trough, preventing the birds from hooking feed out. The revolving spindle keeps the birds from roosting on the hopper. Built as it is, the feed trough is close to the floor and yet constructed to prevent litter from being scratched into it.

Another advantage of this hopper is that it is made entirely of wood. . . no metal parts.

BILL OF MATERIALS FOR COMBINATION FEEDING HOPPER

Bottom: Board 1"x10"x6'

Ends: 2 Boards 1"x10"x19'

Sides of Feeding Trough:

2 Boards 1"x5"x6'

Sides of Grit and Shell Trough:

1 Board 1"x5"x6'

1 Board 1"x4"x6'

Stand, Lighting Board and

Cross Strips:

3 Boards 1"x3"x6'

Spindle: 1 Board 2"x2"x6'

Divisions: 3 Triangular Pieces 4"
on each rectangular side.

INCUBATION PERIODS

Turkey—26 to 30 days.

Guinea—25 to 26 days.

Pea Hen—28 to 30 days.

Ducks—25 to 32 days.

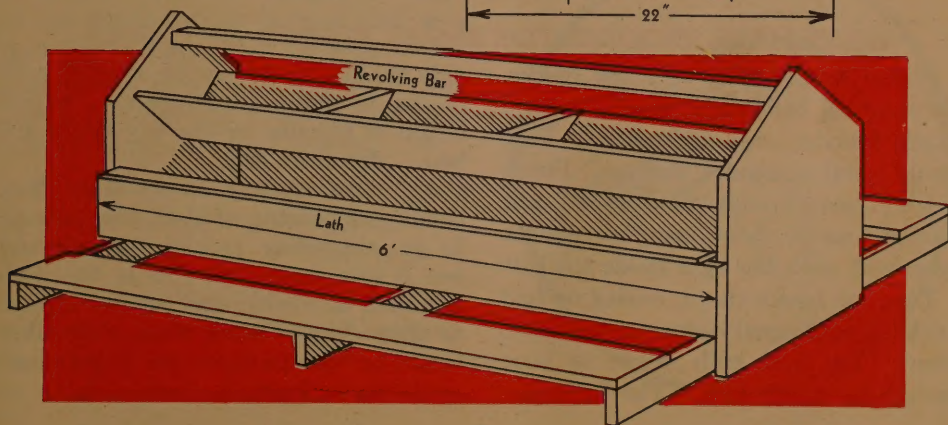
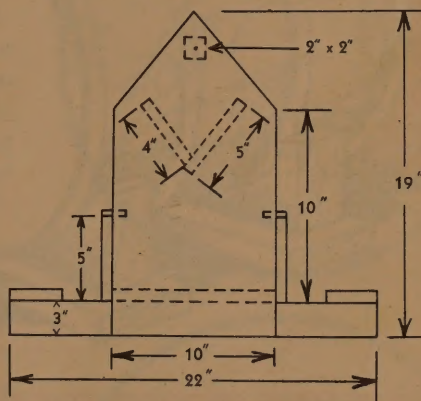
Geese—27 to 33 days.

Hens—19 to 24 days.

Pigeons—16 to 20 days.

Canary Birds—13 to 14 days.

Pheasant—25 days.

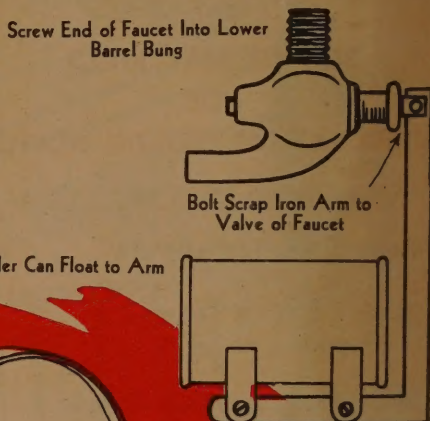


HOME-MADE AUTOMATIC POULTRY WATERER

Almost any farmer can dig up the materials for making a poultry waterer which works automatically. The necessary parts are, 1. A thirty or fifty gallon barrel or drum; 2. An empty pint or quart paint can; 3. A spigot and 4. An old dish pan.

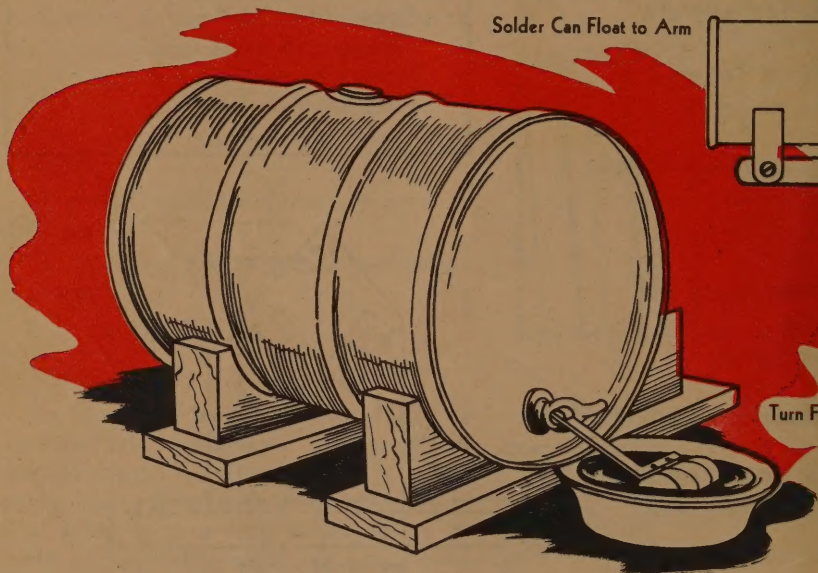
The drawing shows how these parts should be used. The barrel should be blocked firmly in place on its side or can even be fastened to a stone boat or skid and moved when needed. The spigot should be greased so as to work freely. Instead of the comparatively short handle of the spigot, a new one should be made, or an extension fastened on, to which the paint can should be fastened with soldered-on straps and these bolted or soldered to the handle.

Cut a hole in the barrel for easy filling. When the outfit is assembled, the can rests in the water in the dish pan and opens or closes the spigot as the water rises or falls.



Solder Can Float to Arm

Turn Faucet Horizontal



HOME-MADE BROODER FOR SMALL NUMBER OF CHICKS

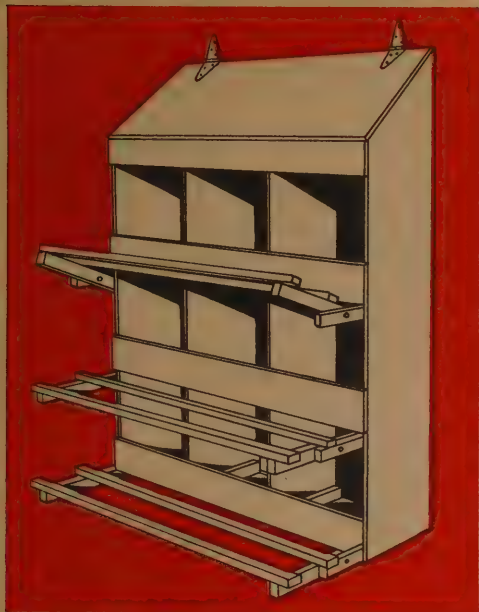
If you have only a very few chicks, not over 25, here's the way to make a simple brooder, easy to operate. Take an old metal or wooden washtub. Punch a few holes through the bottom and through one of them string an electric light cord, with the light inside the tub.

Turn tub upside down, resting on four bricks, placed equal distances from each other. The light bulb should be large enough to furnish heat. The holes pro-

vide ventilation or can be covered with blocks to raise temperature. Adjust height of brooder by the way bricks are laid. . . flat or on edge.

To avoid chilling chicks from floor drafts, take a strip of cloth long enough to go completely around the tub and sew it to a rope. Cut slits in the cloth and then tie rope around tub low enough to allow cloth to touch floor. Slits allow chicks to enter or leave, yet do not stand open to permit drafts.

EASILY CLEANED NESTS



Old scrap lumber or plywood can be used in making these easy-to-clean nests. Hardwood or boarding can be used if you want to do a fancy job. The advantage of this type of nests lies in their ease of cleaning added to the fact that they will not become dirty as easily as some other types.

These nests may be made in a section of nine or twelve.

The easy-cleaning feature comes by hanging the nests on the wall by hinges at the top and using the wall itself as a back for the nests. Thus when the section is swung outward on its hinges the nests are easily cleaned for droppings and dirty nesting material fall out readily.

The extreme slant of the top prevents roosting there and as a result helps keep the nests clean.

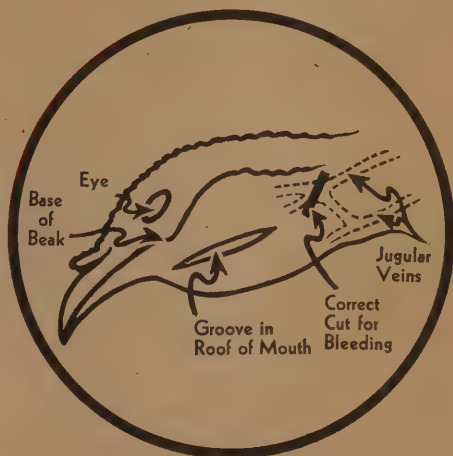
Perches in front of the nests are hinged with a bolt, permitting them to be swung up across the front of the nests at night in order to prevent roosting in them.

TO KILL FOWLS PROPERLY

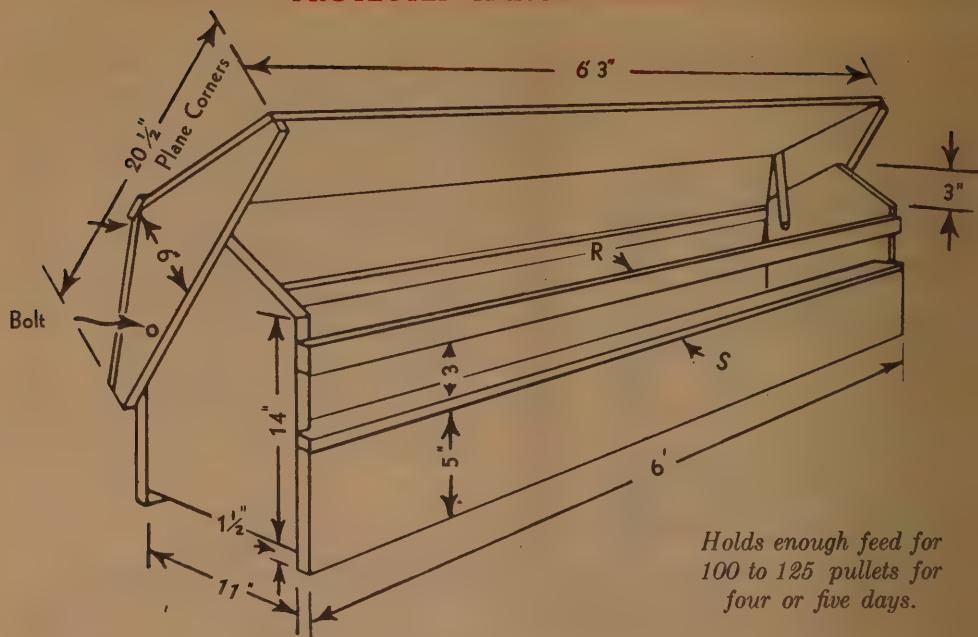
The old time method of chopping off the head of a bird may be satisfactory for home use, but when the birds are to be marketed another method should be used to permit shipping and display intact. Follow the methods shown in the accompanying diagram.

The illustration below shows how to cut the blood vessels in the throat if the bird is to be semi-scalded. In this case it is not necessary to stick the brain.

However, if the birds are to be dry picked, sticking the brain is the method to use. The lower diagram illustrates this method.



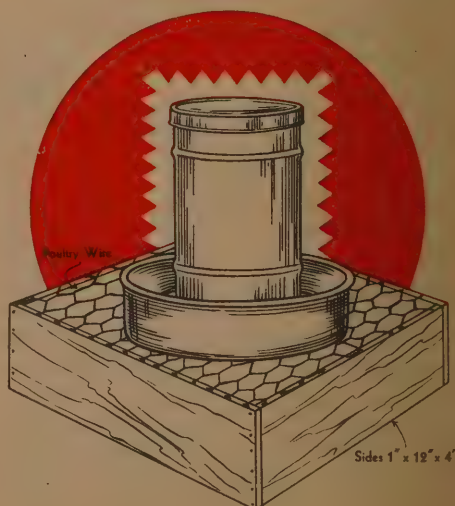
PROTECTED RANGE FEEDER



An advantage of the simply constructed range feeder shown here is the protection it affords. This feeder is 6 feet long and 11 inches wide at the base, stands 20 inches high. All dimensions are given on the drawing. Note that S is a strip nailed on to prevent feed from being wasted by picking too easily from the feeder. "R" is another strip which should be attached in accordance with the size of the birds. From 200 to 250 pullets can be fed for a period of four or five days by use of two such feeders.

THIS EASILY CONSTRUCTED STAND KEEPS POULTRY FOUNTAIN CLEAN

A great deal of time now spent in cleaning the poultry drinking fountain can be saved by mounting the fountain on a simply constructed stand. This stand is 4 feet by 4 feet and 12 inches high. Scrap lumber can be used to make it. After the base has been nailed together, poultry wire is stretched tightly and nailed on. When the fountain is placed on this wire covering it keeps the water clean and the ground around it dry, . . . a sanitary way of providing drinking water for poultry.



SIMPLE BURGLAR ALARM PROTECTS POULTRY OR TURKEY LOT

(See Illustration at Right)

An inexpensive, easily constructed burglar alarm for the protection of turkey lot or poultry run is illustrated here. It consists of a single strand "fence" of smooth steel wire hung about six to ten inches above the ground, on posts which may be fifty to one hundred feet apart, enclosing the area to be protected. If possible to conceal this strand of wire by running it through tall grass or weeds, so much the better.

Between two of the posts, in the place where thieves are most apt to try to get in, this wire should be spliced by an insulator and spring, as shown in the illustration. A strand of fine copper wire should complete the electric circuit by bridging the insulator and spring. It should be fastened tightly to the steel wire at each side of the gap.

This circuit should be hooked up to one of the good, but inexpensive alarm units (closed circuit type), which can be bought. These units operate on a couple of $1\frac{1}{2}$ volt dry batteries.

The whole alarm operates when the intruder stumbles over the hard-to-see wire "fence," breaking the circuit when the spring gives enough to break the fine copper wire.

PREVENT LOSS BY DROWNING

Every chicken lost from your flock takes a bite out of your pocketbook. Why allow needless loss by drowning? To keep chickens from drowning in your barnyard water tank, make a raft or lattice-work of crossed laths small enough so it doesn't wedge the edge of the tank. Set it afloat. It will keep chickens from drowning and still permit animals to drink.

WIPE OUT THE PESTS!

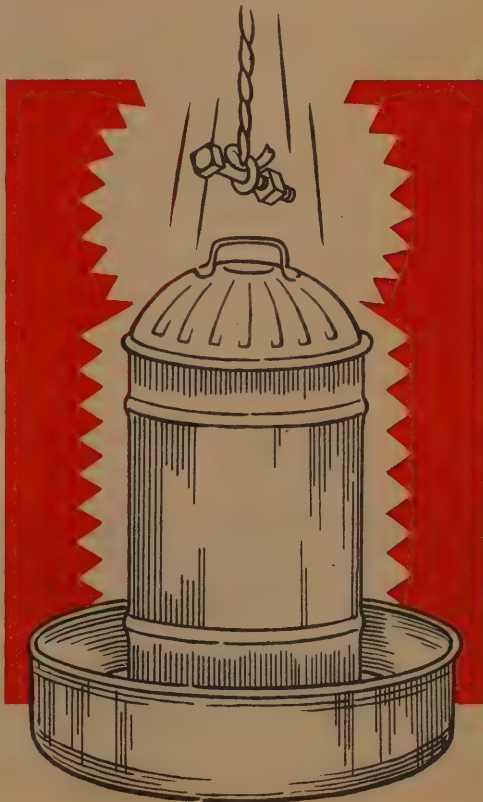
A thrifty poultry flock... a laying, paying flock, is only possible if birds are kept free of lice, mites and bedbugs. Kill the pests that cut down poultry production and cause loss. Use Watkins Roost Paint, Louse Killer and Fly Spray.

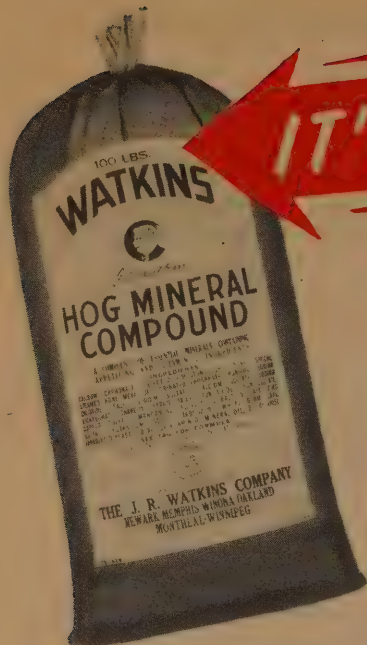


*Simple Burglar Alarm
See Explanation at Left.*

KEEPS POULTRY FROM ROOSTING ON FOUNTAIN

A very simple way of keeping poultry from roosting on the drinking fountain and fouling the water with droppings is illustrated here. A bolt or clevis or almost any weight will do the job. Suspend it by a cord or piece of flexible wire, just about four inches directly over the fountain. Whenever one of the birds flies up to try and roost on the fountain, the weight swings and knocks it off.





IT'S IN THE BAG!

*Vital Mineral
Ingredients That
Pigs Need to Make
Bigger Hogs of
Themselves!*

You have triple assurance that Watkins Minerals are absolutely right. First, they are backed up by our 75-year reputation for giving you honest quality products at honest prices. Second, these minerals have been thoroughly tested at the Watkins Experimental Farm. Third, they have proved themselves in the feed lots of America.

More farmers are using Watkins improved Hog Mineral Compound, because they find it keeps sows in top condition so they will farrow strong, thrifty pigs. It contains minerals and other vital ingredients that are necessary for good, profitable hog raising.

Get quick pork cheaper. Pigs must have the right minerals to assimilate feed properly. Otherwise, they eat more than they can digest and a lot of the feed passes through undigested because of the lack of minerals. Supply them with Watkins Hog Mineral Compound and your pigs will grow faster on less feed.

Illustrated below are some of the pure-bred Duroc Hogs raised by Hohwieler's of Chester, South Dakota. Watkins Improved Hog Minerals are used exclusively—and so is Watkins Mange Oil.



CHAPTER II

HINTS FOR MORE PROFITABLE HOG RAISING



DRAFT-PREVENTING HOG HOUSE DOOR

Hogs are more subject to colds and flu when the hog house is drafty. This swinging door with its simple construction may be a puzzle to the hogs at first but it will not be long before they learn how easy it is to get in or out by pushing on the door.

The door itself can be constructed of scrap lumber and swings on an old wagon rod or similar long bolt run through screw eyes set into the door. The rod can be fastened to the casing at each side by screw eyes or metal straps nailed to the casing.

CONTROL HOGGING DOWN OF CORN

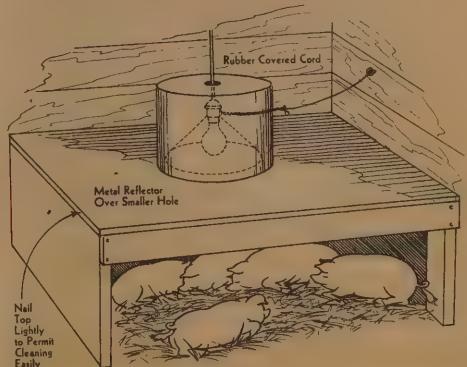
It's a good idea to limit the area hogs can cover when turned into the corn field. In this way, the field is cleaned up thoroughly. The best way to accomplish this result is to install an electric fence which can be moved over as the hogs clean up the corn.

ELECTRIC PIG BROODER

Keeping small pigs healthy in cold, damp weather is quite a problem but if you have such a piece of equipment as this simple electric pig brooder, it will help a great deal. This is a low-cost, easily-made brooder for it can be constructed from a few pieces of lumber and a piece of pressed wood or plywood if you have it handy. The picture shows it to be one which can be adapted to fit available space.

Use a large metal reflector for the light and a rubber-covered wire extension cord. The size of the light should be changed to correspond with weather conditions—the colder the weather, the larger the bulb.

Great care should be taken to see that the electric socket and lamp are far enough away from straw or other inflammable materials to prevent fire for the bulb and socket become quite hot when operated continuously. A wooden box can be set over the lamp and socket to give added protection against fire.



U. S. D. A. URGES CONTROL OF HOG MANGE

Hog Mange has caused a great deal of loss to the farmers of this country. . . so much that the U. S. Department of Agriculture is strongly urging a better farm-control of parasitic mange in hog. Reports from the Department's veterinary inspectors show that mange is not only of common occurrence at public stock-

yards but they indicate a serious infection on the farms where the hogs originated.

Watkins Mange Oil has been found to be very effective in controlling parasitic mange in hogs. Hogs should be sprayed regularly every thirty days to control the spread of this disease.

NO-TIPPING HOG TROUGH

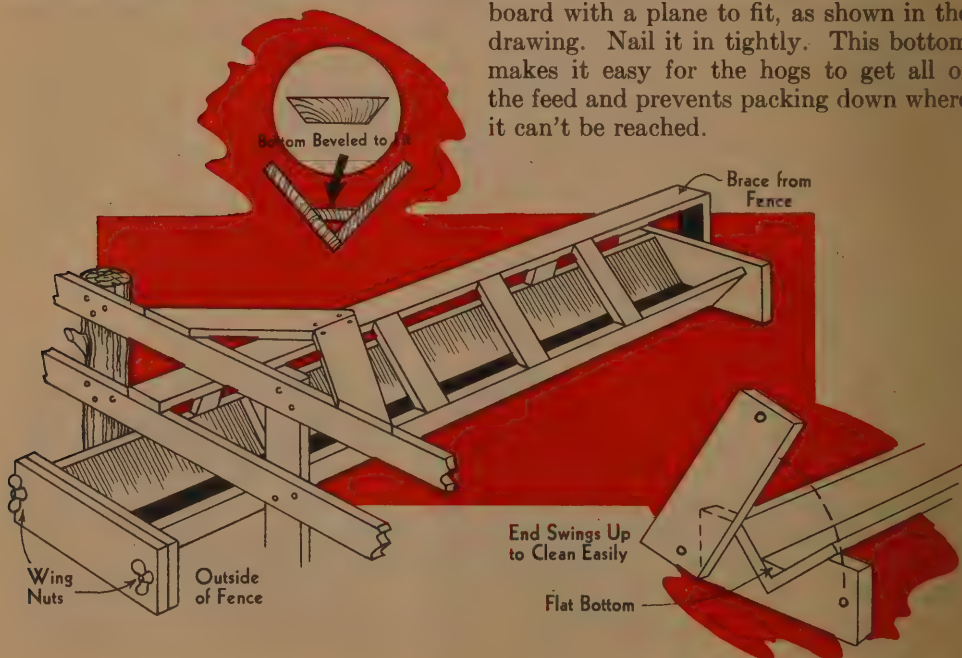
A no-tipping hog trough which also prevents crowding is easily constructed and convenient for dumping swill without interference from the hogs.

The V-shaped trough is made of two 2-inch planks, 16-feet long, one 12 inches wide and the other 14 inches wide. When staked down endwise to a board fence, one end is left protruding through to the outside so that the swill can be dumped. This trough also prevents crowding by the hogs.

At one end of the trough a post should be put and from it a 2x4 run to the fence about 12 inches above the edge of the trough board. Slats should be nailed from the 2x4 to the trough edges to allow the pigs' heads to come between them. These should be 1"x2".

If the inner end is set about one inch higher than the outer end, the trough will be easy to clean providing the outer end piece is fastened on with a couple of bolts. Removal of one of the bolts permits the end to be raised up and the trough washed and swept out easily.

This feature helps to keep hogs healthy for the trough can be cleaned to prevent feed being left in the bottom and so souring and rotting. To aid in making the trough easy to clean, put a floor in the bottom of the trough by beveling the edges of the board with a plane to fit, as shown in the drawing. Nail it in tightly. This bottom makes it easy for the hogs to get all of the feed and prevents packing down where it can't be reached.



INDIANA TESTS INDICATE NEED FOR MINERALS

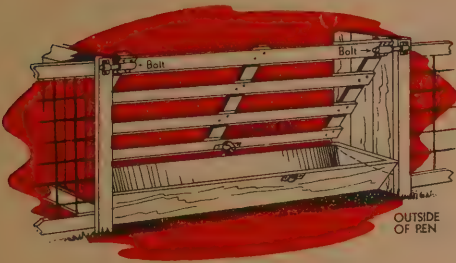
Recent tests in Indiana indicate that Minerals are essential to the diet of hogs if marketing time is to be speeded up. In fact, these tests on March farrowed pigs indicated that hogs could be marketed in September on a ration of corn, soybeans, minerals and legume pasture. However, when the minerals were omitted, it took a month longer.

During the scarcity of tankage, it was found that a pound of soybeans supplemented with minerals was equal to a pound of 60% tankage.

A somewhat similar statement comes from the Swine Specialist of North Carolina State College. He says that plenty of grazing crop plus a full mineral mixture at all times and a limited amount of grain and protein supplement will enable growers to produce cheaper hogs.

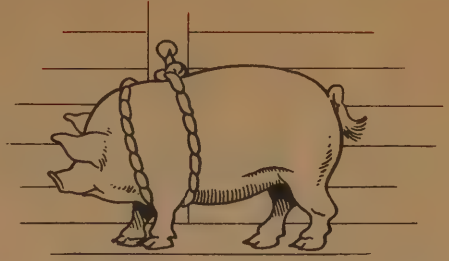
For a balanced mineral mixture which provides all of the necessary minerals plus the trace elements which have been found essential—feed Watkins Mineral Compound for hogs.

SWINGING GATE STOPS FEEDING TROUBLE



To prevent the difficulty often experienced of having pigs crowding in while the trough is being filled, just construct a swinging gate like the one shown here. It keeps the hogs back until the trough is filled. It's simple to work for all you need to do is to swing the gate back and hook it on the pen side while the feed is being put in the trough. When this is done, release the catch, swing the gate shut the other way and let the pigs go after the feed.

HOW TO TIE HOG FOR HAULING



To prevent a hog from jumping out of a trailer or wagon while hauling it and without the necessity of tying it by the leg, try this method. It requires a rope about five feet long. Run one end under the hog's left leg and put the other end up over the top of the animal's neck. Then, bring down under his right leg and up to the top of his back where they should be tied tightly enough to prevent the hog from raising his head. As long as he can't raise his head, he can't jump or climb out but is able to stand or move easily.

PROVIDE SHELTER FOR HOGS TO AVOID FLU

Adequate shelter should be provided for hogs during the winter in order to prevent them from colds, pneumonia and flu while sleeping out. The most satisfactory shelter is a low shed open only on the south side.

E. T. Robbins, livestock extension specialist at the University of Illinois College of Agriculture, advocates small farrowing houses to provide shelter for from three to six hogs. However, he adds that the rest of the herd may be well sheltered in a low, open-front shed with a tight roof, back and ends.

Such a shed, sixteen feet or more in width and three or four feet high at the back and five to seven feet high in the front helps to keep hogs healthy and contented. Watkins Dry Dip should be used in such shelters to help in avoiding colds and flu. In order to keep the south side low enough for warmth, wide sheds may need a two-slope roof.

**STOP LOSING \$2.00 per head
ON MANGY HOGS!**

USE WATKINS MANGE OIL

Mange is a skin disease caused by very small mites. It is highly contagious. As the animals scratch on pens, posts, walls, etc., the mites spread from one animal to another. You can control the common mange of hogs by simple and effective treatment with Watkins Mange Oil.

Mange mites pick your pockets of profits when they infect your hogs. Mangy hogs are commonly docked \$2 a head. Hog mange causes other great losses to swine growers. The constant rubbing and irritation slow down the growth and make the pigs more subject to disease and other troubles. Because of this unthrifty condition, there is also a big waste of feed. Stop these losses by using Watkins Mange Oil for prevention and control of sarcoptic mange or scabies.



*Watkins Mange Oil
also controls mites
in Poultry houses - Lice
on cattle, horses and mules*

Mites work on hens at night, hiding in the cracks and crevices of poultry houses during the day. Kill the mites in poultry houses by thoroughly spraying the roosts and walls with Watkins Mange Oil. It also kills fleas, bedbugs, bluebugs or fowl ticks.

100% ACTIVE INGREDIENTS

Lice often become very troublesome on cattle, horses and mules. They can be kept in control by lightly spraying the animals with Watkins Mange Oil. For these many valuable uses, it will pay you to keep Watkins Mange Oil always on hand for prevention and protection.

SAVE FEED! CUT PRODUCTION COSTS!

INCREASE PROFITS

80% OF COST OF PORK IS FEED
85% OF COST OF BEEF IS FEED
50% OF COST OF MILK IS FEED
75% OF COST OF EGGS IS FEED

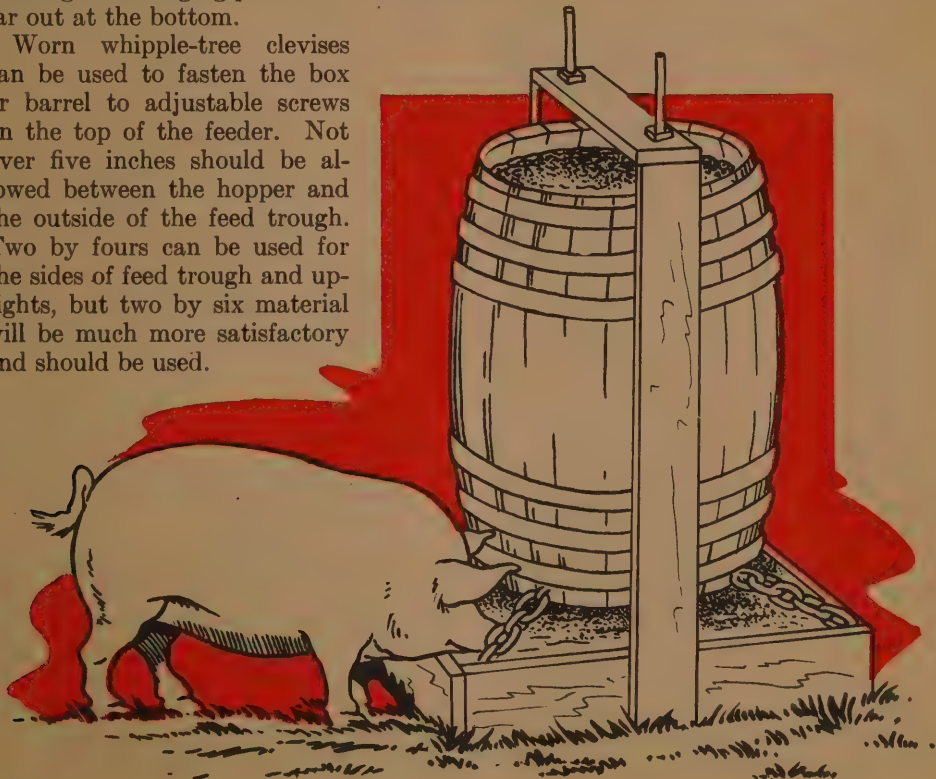
The greatest item of cost in the production of pork, beef, milk and eggs is FEED. Feed alone is about 80 per cent to 85 per cent of the cost of producing pork and beef. Fifty per cent of the cost of producing milk, 75 per cent of the cost of producing eggs is FEED. When you save feed, you cut production costs and increase your profits.

It is a generally recognized fact that about 25 per cent of the feed eaten by farm animals is lost because of the lack of minerals in the feed. A ration properly balanced with all necessary minerals (such as Watkins contains) can reduce your cost of production by saving feed that passes through the digestive tract undigested because of a mineral deficiency.

HOW TO MAKE A HOME-MADE HOG FEEDER

Under present conditions, it is almost impossible to buy a suitable ready-made hog feeder but a very satisfactory one can be made in a very short time from stock lumber or a leaky fifty-gallon barrel. Old tire cross chains can be used to keep the pigs from pushing the swinging part of the feeders too far out at the bottom.

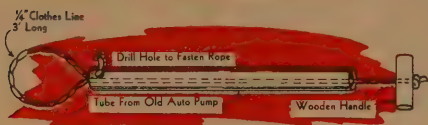
Worn whipple-tree clevises can be used to fasten the box or barrel to adjustable screws on the top of the feeder. Not over five inches should be allowed between the hopper and the outside of the feed trough. Two by fours can be used for the sides of feed trough and up-rights, but two by six material will be much more satisfactory and should be used.



100% OPEN FORMULA

When you buy prepared feed, you buy it on the basis of the value shown on the sack. You pay more for a 30 per cent protein feed than for one which shows 18 per cent. Minerals are not all just alike—they vary just as prepared feeds do. It is, therefore, wise to buy your minerals on the basis of what is shown on the tag or sack. Watkins Mineral Compounds list openly on each bag the amount of each active ingredient.

MAKE YOUR OWN HOG CATCHER

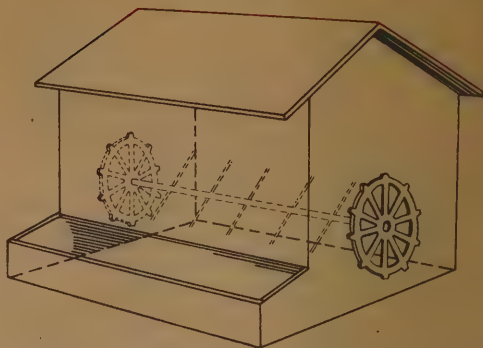


The barrel of an old tire pump or an old fork or shovel handle about two feet long can be made into an effective hog catcher by following these directions. If you have the tube from the pump, drill a hole about half an inch from one end. Through this run a piece of one-quarter inch rope or stranded wire clothesline and put a good knot in it large enough to prevent pulling through the hole.

Run the rest of the cord back through the barrel of the pump leaving a loop and, on the end which is left hanging free put a handle which can be made from a section of broomstick sawed off with a hole bored through the center. Here again a knot should be made to prevent pulling the cord back through the hole.

In case you do not have the barrel of a pump, here's the way to use the fork or shovel handle. Drill a small hole through it about one half inch from the sawed-off end, and through this put a thin bolt with an eye on one end. Fasten one end of the wire or rope to the nut end of the bolt and thread the other end back through the eye. Now this forms the loop and on the free end of the wire or rope, put a handle as described above. A large harness ring can be used for the pulling handle instead of the piece of broomstick.

NON-CLOGGING SELF-FEEDER FOR HOGS



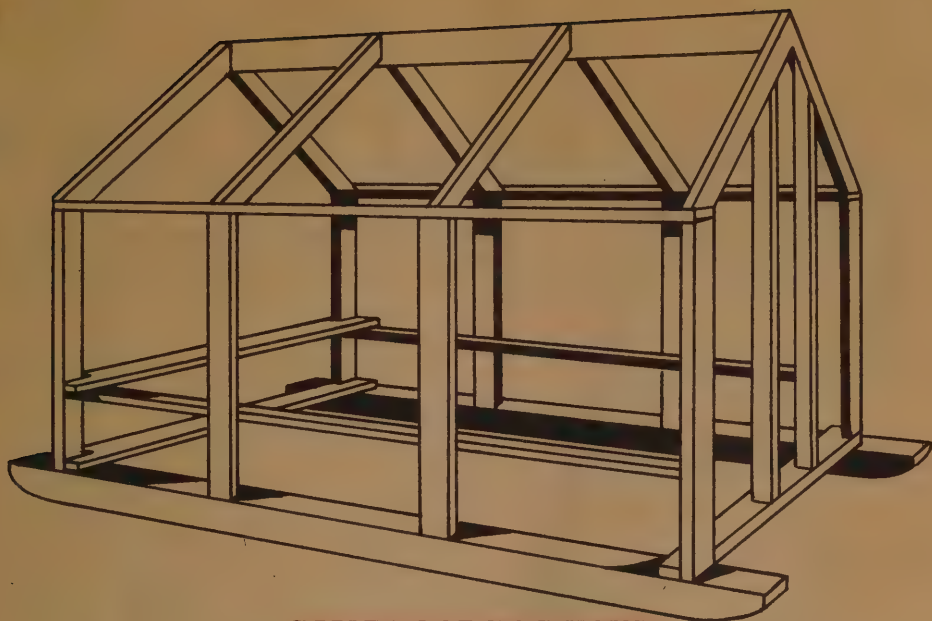
Here is a handy way to keep feed from clogging in a self-feeder, especially when ground feed or ground oats are being fed. The pigs will rub on the sprockets at each end of the feeder so the feed will drop down. Use the sprockets from an old binder connected by a piece of three-quarter inch gas pipe run through the feeder about eighteen inches from the bottom. Bolts or rods should be welded to the gas pipe to stir up the feed.

T. B. IN HOGS LAID TO POULTRY

Research by the Department of Animal Pathology and Hygiene at the University of Illinois College of Agriculture has brought to light that tuberculosis in poultry is responsible for more than the loss of chickens. About 90% of the same disease occurring in hogs comes as a result of the spread of that disease from poultry.

While tuberculosis in cattle in Illinois has been cut to less than one-half of one per cent infection, no such gains have been recorded in wiping out the disease in poultry and hogs.

Records of Federal meat inspection for 1942 showed that one out of every twelve hogs slaughtered in the United States showed lesions of tuberculosis. As a result of this infection, it is estimated that a waste of fourteen million pounds of pork resulted from hogs condemned as unfit for human consumption.



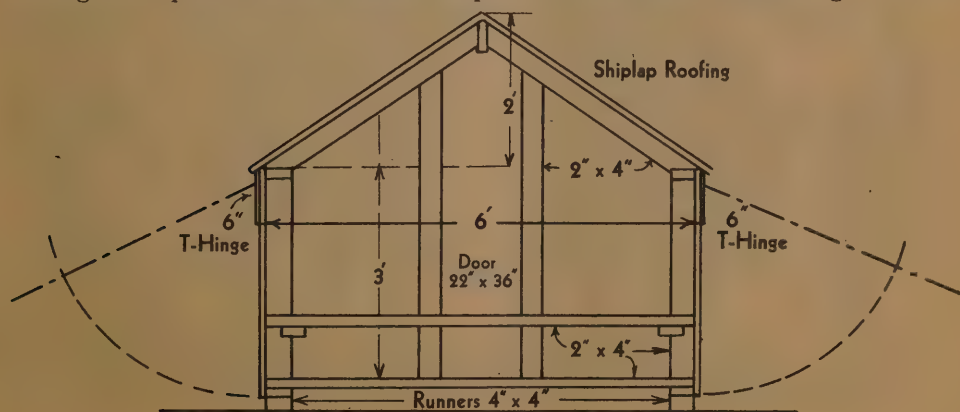
GABLE ROOF HOG HOUSE

A well-built, long-life hog house having a full frame can be easily constructed from the diagram below showing dimensions. This picture illustrates the hog house but without a floor which can be put in if desired. This same house is solidly built—enough so that roof doors or windows can be put in without weakening it in any way. The openings make it possible to be cleansed easily and permit the sun to enter. Also, it can be moved readily because of its construction on runners.

Both sides of the house are equipped with hinged doors.

The material needed for this 6' by 8' house are: Runners, 2 pcs. 4"x4"x9', Ties, 2 pcs. 2"x4"x6', Studding, 3 pcs. 2"x4"x12', Plate, 2 pcs. 2"x4"x8', Ridge, 1 pc. 2"x4"x8', Rafters, 4 pairs 2"x4"x3'6", Fenders, 2 pcs. 2"x4"x8', 1 pc. 2"x4"x6' and 1 pc. 2"x4"x4', Siding, 120 bd. ft. (60' in 12' lengths and 60' in 16' lengths), Roof Sheathing, 100 bd. ft. shiplap, Roofing, 1 roll of green slate surface, Nails, 20 pounds 7d and 16d. Hinges, 3 pairs of 8" T-shaped, Paint, ½ gallon.

If a floor is to be used with this house, omit the ties and add 65 surface feet of flooring and 2 pcs. 2"x4"x8' for floor sleepers. Also add nails for flooring.



PRODUCE MORE MEAT *and* MILK SAVE FEED!



Cows wear out if you keep them producing heavily and bearing calves without replenishing the minerals they need. Home-grown grains and even good pasture are short of minerals. Keep your cows producing by giving them Watkins Stock Mineral Compound. They will get more good from their feed, will keep up production and stay in better condition. For most profits from your dairy and beef cattle, feed Watkins Stock Mineral the year round.

Watkins improved Stock Mineral Compound helps cattle, horses, sheep, mules and goats to better condition. It costs less than one cent per day to feed for each 1,000 pounds of live weight.



CHAPTER III

HINTS FOR MORE PROFITABLE LIVESTOCK RAISING

Dairy and Beef Cattle, Horses and Mules, Sheep and Goats

SAFE HANDLING OF FARM ANIMALS

Serious and even fatal injuries can be avoided if farm animals are handled properly. The rules are simple. Remember that fright or extreme pain is often the cause of an animal becoming vicious.

A standard rule is, "A bull can never be trusted."

Before entering a horse's stall, speak to the animal so that it isn't startled. Don't mistreat the dog and don't let the children tease the animal for it may turn on a person some day. Avoid sudden noises when around most animals.

The smallest scratch or bite from an animal should be treated at once. Serious ones require the attention of a physician immediately.

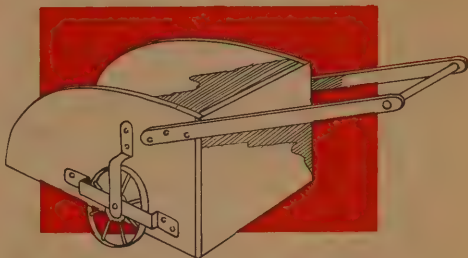
Don't leave a team standing untied. Some unusual noise might frighten the animals and cause them to run away. This might be the means of serious injury or death to a child or even a grown-up. Be sure the harness is good and strong.

Your animals are worth money. Protect them from accidents too.

COMBINATION RACK IS TIME SAVER

A combination hayrack and feed rack will save time in winter. A rack so designed can be hauled into the field and loaded from the stack. Then, it can be driven right into the feed lots and the cattle themselves will unload it.

EASY-TO-MAKE FEED CART



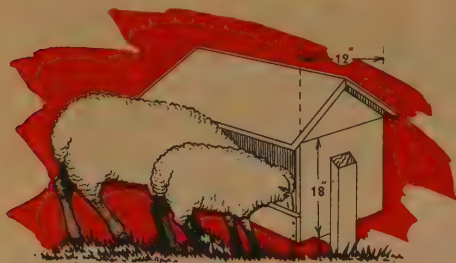
Here is a clear idea of the construction of this simple feed cart. Use half-inch plywood or some similar material and glue before using nails or screws. Reinforce the front edge away from the handle with galvanized iron, if available.

The clearance between the bottom of the cart and floor should be about two inches after the wheels are in place. This permits pushing the cart easily and, at the same time, loading it by simply pushing it into the feed.

MAKES EWES WALK FOR EXERCISE

Unless steps are taken to cause them to get it, breeding ewes will not get enough exercise. To cause them to get this necessary exercise, give them their morning feed, usually corn fodder, out in a field. Load the fodder on the hay rack and then leave it standing in the field on a wagon. Feed the bundles direct from the rack and from time to time replenish the supply.

ELIMINATE DRENCHING SHEEP FOR WORMS



Here's a simple plan for getting away from that tiresome chore of drenching sheep every few weeks for worms.

Construct a dry, rain-proof feed box such as is shown here and in it place a mixture of 12 pounds of loose salt to each pound of Watkins Powdered Phenothiazine. Keep this mixture available to the sheep all the time. Watkins Phenothiazine does an extremely effective job of worming and sheep like the mixture.

Nodular worms make sheep unthrifty, reduce fleece yield and cause death losses. In addition, there is an estimated loss of six million dollars from damaged intestines needed for surgical sutures. Use Watkins Phenothiazine to help control nodular worms in your sheep. It is cheap to use, yet safe and effective.

"OPEN FACE" SHEEP

An old belief that sheep with an abundance of wool on the face was a sign of heavy fleece and a profitable animal has been shattered by experiments conducted in Idaho by the U. S. Department of Agriculture. Consequently, the recommendation has been made to select for breeding, sheep with open faces—that is, with little or no wool covering. By this means, wool-blindness in a flock is steadily reduced.

Sheep with too much wool on the face can not see to graze well. Furthermore, the experiments mentioned above have shown that open-faced ewes produce almost ten per cent more pounds of lamb in a year than the so-called wool-blind or partly wool-blind ewes.

SHEEP FEEDING TIPS

Plenty of clean water, salt and mineral should be available all of the time.

Provide. . . and keep dry, some place for sheep to lie down.

Avoid shutting up sheep in a warm barn.

Sheep and hogs should be kept in separate yards and should have separate drinking troughs.

Grain feeders and water troughs should be kept clean at all times.

All sheep should be able to eat at the same time without over crowding. Provide plenty of feed troughs.

Grain should be fed two or three times a day. . . at the same hour daily.

Give sheep fresh hay night and morning.

It is better to feed hay twice a day, than the same amount at one feeding.

Don't feed timothy hay to sheep as a regular thing.

Start lambs on grain slowly. Limit the amount to one-fourth pound per head per day for the first few days. Then add a bit every two or three days until you are giving all they will eat in a day. Don't overfeed and waste grain.

While the amount varies in accordance with the grade of corn and the size of the animal, lambs will eat from one-and-one-third to two pounds per day and should gain one-fourth pound daily.

Figure 1½ to 2 pounds more grain for older sheep than for lambs and a little faster gain.

Less corn is needed to fatten sheep than barley or good wheat screenings, but you can increase the amount per day faster after you have them started on feed.

EASY METHOD TO GET COWS IN FROM PASTURE

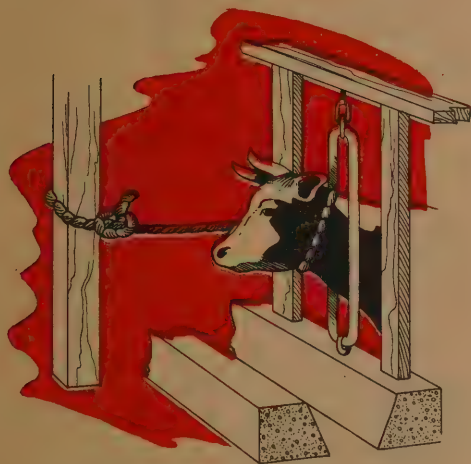
A very simple way to insure the cows coming in from pasture at milking time is to give them a little grain in summer. When they get the idea they will be fed, they'll be on hand at milking time regularly. Practice of this idea also helps keep up production.

COWS NEED WATER AFTER EATING

A statement from Iowa State College carries the information that cows need plenty of water after their evening feed of grain and hay if maximum production of milk is to be expected. The statement continues that the cow is most in need of water after she has eaten but animals under barn care are sometimes obliged to go without water until they have had two feedings, one in the evening and another the following morning.

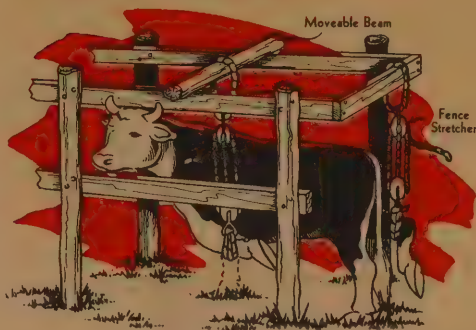
If individual drinking cups for dairy cows are not available, it's a good idea to have a small tank right in the barn where it will not freeze during the winter. Be sure your cows have water available all of the time.

HOW TO KEEP COWS FROM KICKING AT MILKING TIME



A cow must move forward to kick. This idea is a very simple one for by tying a rope around the cow's neck and drawing her as far forward as she can go, she finds it impossible to kick for there is no place to move forward to start the action. Care must be taken in tying the rope around the cow's neck so that breathing is not cut off. This treatment needs to be repeated only a half a dozen times before the cow will stand without kicking and without the necessity of tying her.

HOOF TRIMMING RACK



The job of trimming the hoofs of cattle is often a disagreeable one but can be made comparatively simple by the use of the hoof trimming rack illustrated here.

Set the posts (of which there are four $8\frac{1}{2}$ to 9 feet long) solidly in the ground about four feet apart and construct the balance of the stall as shown using five 8 foot 2x6's plus a short post, a barbed wire stretcher and a heavy leather strap sling. The construction is simple as you can see. The short post used on top is not fastened down so that it can be moved readily.

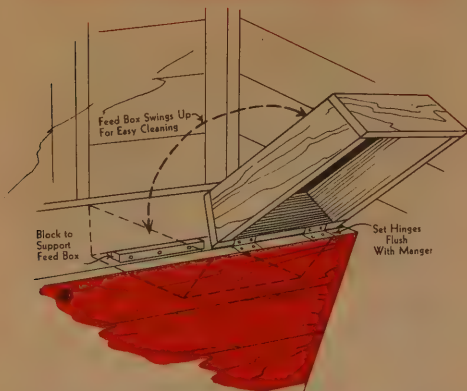
To use this rack, lift the hind foot of the animal by hanging the wire stretcher from the beam above the animal's hind quarters. Around the animal's leg just above the hock, place a heavy strap with a ring in each end of a sling. Hook these rings on the lower end of the wire stretcher and when you pull up on it, the foot is brought into position where it is easy to do the trimming job.

Virtually the same idea is used to raise the front leg. In this case, lay the post across the top of the stall at such a position as the sling can be put around the foreleg just below the knee and raised in the same manner with the fence stretcher.

WATKINS VETERINARY SALVE

Get a can of Veterinary Salve from your Watkins Dealer. You'll find it a handy preparation for dairy use or as an external dressing for superficial cuts and wounds of animals. Use it to keep cows' teats soft and in good milking condition. Does not give odor or taint the milk.

SELF CLEANING FEED BOX



No need of a shovel or anything of that kind to clean out refuse from the feed box if you will construct it in this simple way. Make it of one-inch wood and hinge it on the side away from the wall. Swinging the box forward on the hinges turns it upside down and permits all of the cobs, stems, etc. to fall out. Be sure to set the hinges into the wood to prevent animals from biting on them. Feed Watkins Minerals and you'll find your stock will not chew on wood as readily.

SAVES STEPS IN FEEDING STOCK

The amount of work required at feeding time can be cut down considerable if larger baskets or pails are used to carry feed from the feed box to the stalls. Simplify the job by marking off the basket or pail according to the amount fed to each animal. In this way, several animals can be fed at one trip with each one receiving the proper amount of feed.

DON'T ROB YOUR COWS

A cow has three jobs to do: (1) Keep up her body. (2) Give milk. (3) Make a calf.

All three of these jobs take minerals and require minerals. If you don't supply minerals to your cows, in addition to those which she gets in the regular feed, you'll rob her. Then one of these three things happens: She may lose weight and get out of condition, short you on milk, or fail to produce a good calf. That's just as true of beef cows as it is of milk cows.

QUICK METHOD OF WASHING CREAM SEPARATOR

It takes longer to write this than to do it because this plan will enable you to wash your cream separator in only two or three minutes:

First, stop turning or shut off power as soon as all milk has left the supply tank. Then dash one cup of warm water into the supply tank for a rinse before turning off the faucet. Pour about a pint of warm water over the float, in order to clear the cream from the separator.

Then put a tablespoon of some wetting agent in the supply tank and pour over it a full pail of warm water at about 120 degrees F. Make sure that the wetting agent is dissolved and then let the solution run through the separator while the bowl is running down. As the solution comes from the machine, use a soft bottle brush to clean the inside and outside of the supply tank and the outside of the cream and skim milk spouts.

The solution that has come from the bowl should be poured into a dishpan or washing tub for cleaning pails and other milk utensils.

Dismantle the machine. Put the floats, spouts and inlet into the supply tank. These parts seldom require further cleaning. Sometimes foam will remain on these parts, but this is more likely to be the foam of the cleaning solution instead of the milk residue.

Open the bowl and check the disks. If there is a smear on the disk, clean it by running a brush down through the hole several times while the disks are setting in water. Shake the disks apart and place them in the supply tank with the other parts.

With a soft brush, remove the slime from the rest of the bowl. Then the final step is to pour boiling water over all parts in the supply tank, drain it off and let the machine dry.

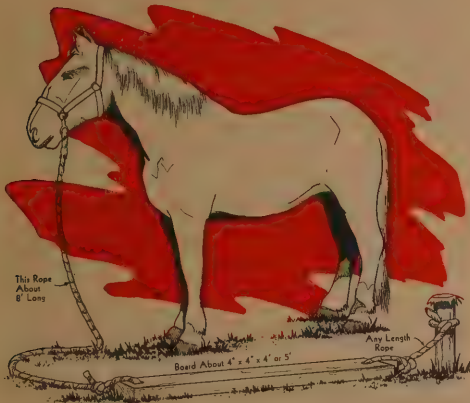
AUGMENTED PASTURE INCREASES MILK YIELD

A South Dakota farmer discovered a way of increasing the milk yield of his cows in August while most herds were falling off. He planted sweet clover and sudan, seeded together in the spring. This furnished good pasture when the prairie grasses matured and were unpalatable to the cows.

STOP HORSES FROM KICKING EACH OTHER

A simple method of preventing horses from kicking each other is that of tying a strap to which about eight inches of chain has been fastened around one hind leg just above the knee. Whenever the horse tries to kick, the dangling chain will slap its other leg. It doesn't require very many slaps of this kind to overcome the kicking habit.

PREVENTING SNARLED-UP PICKET ROPE



Use the simple arrangement shown here and you'll have no trouble with getting the picket rope all snarled up when you stake out an animal. A short length of the rope leads from the stake to a piece of lumber which may be about five feet long and four inches by four inches. The picket rope itself is then fastened to the other end of this piece of wood through a hole bored large enough to permit the rope to slide through easily.

KEEP COWS FROM JUMPING



One of the simplest, most humane and effective means of curing a cow from jumping and yet permitting her to graze freely or fight flies is illustrated here. Have your harness maker (or do it yourself) make a couple of leather straps in which a ring has been set to buckle around the front and hind legs of the animal on the same side just above the hoofs (coronary bone). Then, get a piece of light chain about three feet long with snaps at each end. Snap these into the rings and you have a most effective means of stopping jumping habits. It's easy to unsnap the chain when putting the cow in the stable.

MOVING BALKY COW

A simple and very effective means of causing a cow to get up quickly when she lies down and refuses to be led or loaded into a truck is that of placing the palms of the hands over her nostrils with fingers under the jaw, tightly enough to stop breathing. It gets immediate action and is a humane way of getting results.

SAVE WORK BY TURNING HORSES INTO PASTURE

When the weather is good, it will pay you to turn your horses into pasture at night after their work is done. It not only saves a lot of work for you in cleaning the barn but saves bedding and hay as well. In addition, horses will keep in better condition because they relax more easily out-of-doors, keep cooler and their digestion is improved by the addition of grass to their ration.

DON'T LET WORMS STRANGLE YOUR LIVESTOCK and PROFITS

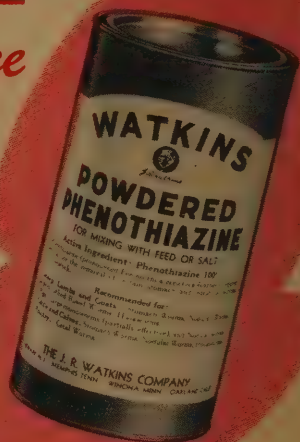
\$100,000,000 ANNUAL LOSS

Use Watkins Phenothiazine

SAFE • SURE • ECONOMICAL •

Roundworms, stomach worms and other internal parasites cause losses of over \$100,000,000 a year in the United States, according to authorities in the U. S. Department of Agriculture. Worms stunt the growth of livestock, kill young stock and poultry and waste valuable feed.

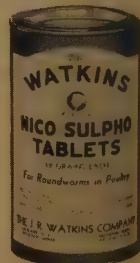
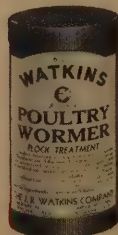
Use Watkins Liquid or Powdered Phenothiazine, the modern wormer, for swine, lambs, sheep, cattle, calves, cecal worms in poultry and turkeys. Watkins 100 per cent Phenothiazine Powder is especially suitable for mixing with the feed for swine and poultry and for mixing with salt in the case of sheep. You simply add Watkins Phenothiazine according to the directions. As each animal gets its share of the medicated feed, you get the job done effectively and with little fuss or bother on your part. Watkins Phenothiazine is cheap to use, yet safe and effective.



Protect Your Flock from Roundworms

Roundworms in poultry interfere with growth, egg production and the efficient use of food. Protect your flock from roundworm damage by individual treatment of the birds with Watkins Nico Sulpho Tablets—or by the flock treatment, using

Watkins Poultry Wormer. Watkins Poultry Wormer is a "one-shot" treatment for large roundworms. It is simple to use and effective. You need not fast the birds before treatment or give a laxative after treatment.



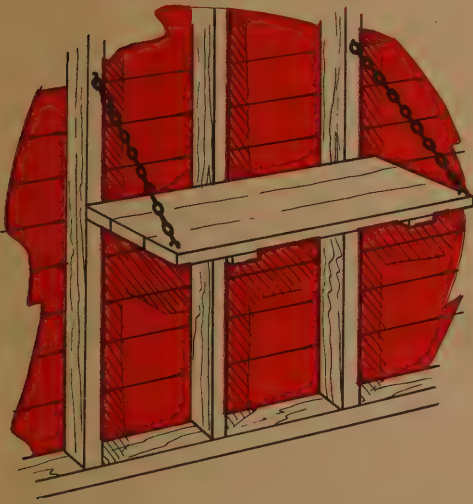
CHAPTER IV

AROUND THE FARM HINTS

USE BOTTLE AS TROWEL

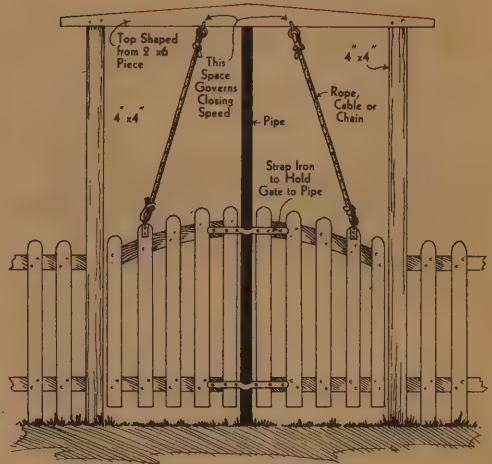
Whenever you have concrete work to do in which you wish to eliminate sharp corners such as occur when walls and floor meet, use a large round, smooth bottle as a trowel. A Watkins 16-oz. Antiseptic bottle will do an excellent job.

HANDY MILK SHELF



The handy milk shelf illustrated here will keep milk clean and cats away while you're milking. With a few boards and hinges, you can build a shelf against the barn wall. Cut an old tire chain in half and staple one end of each piece to studing about twelve to fifteen inches higher than the shelf. Then, fasten heavy hooks to the outer corners of the shelf to which the chains can be hooked when the shelf is level and in use. It drops out of the way readily when the chains are unhooked.

SELF-CLOSING GATE

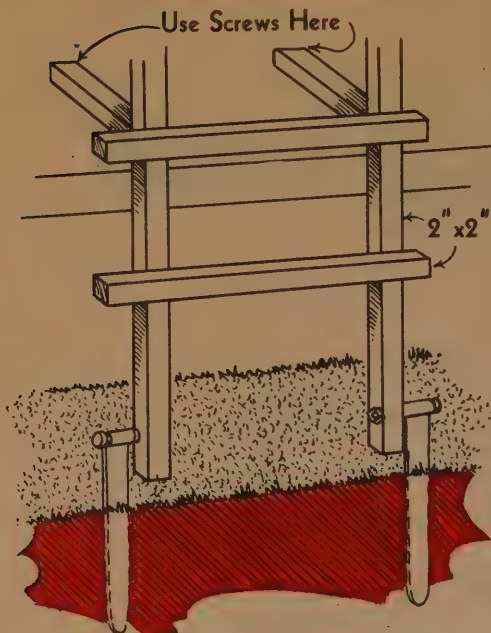


Convenience and attractiveness characterize this self-closing gate. The illustration has no dimensions given since the width of the gate will have to be suited to your needs.

The advantage of this gate is that it may be opened by simple pressure with the foot or body from either side yet will close itself and will not blow open. Unless this gate is so situated that livestock can rub against it and so open it, no latch is needed.

The picture explains its working. The upright in the center is a pipe and the gate revolves around this pipe by virtue of metal straps on each side. The weight of the gate rests on the two rope cables or chains which suspend it from the cross piece at the top. The distance of which the top anchors of these ropes are placed apart governs the speed with which the gate closes itself—the further apart, the faster the speed.

HINGED TRELLIS



It would be a handy thing if a trellis could be laid back on the ground for painting or repair without having to take it and pry it loose from its base as is the case usually. Such a trellis is illustrated here. It is made of 2 inches by 2 inches stock for both upright and cross pieces. These should be put together with nails after the joints have been brushed with a good waterproof casein glue. The hinge construction is simple. These are made from half of the long leaf of a car spring driven into the ground to the proper height and leveled. Longer bolts replace the original shackle bolts and extend through the loop of the spring and the uprights of the trellis. It's a good idea to brush or dip the holes in the trellis with creosote after they are bored and so prevent the uprights from rotting at the ends. In order to fasten the trellis to the wall or building, long screws should be used as indicated.

—and here's another good farm hint—

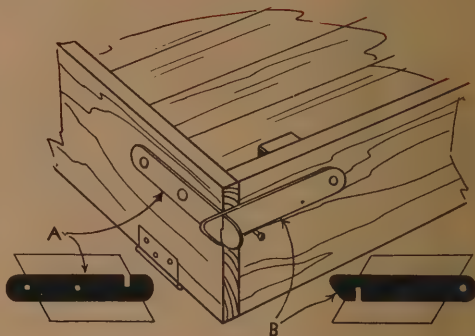
**Wait for Watkins
It Pays!**

HOW TO KEEP LEFT-OVER PAINT

It's almost impossible to buy just exactly the amount of paint you need for any certain job but there's no use throwing away what you have left or letting it spoil by seeing a heavy oil skin cover it. Keep a good gallon can or even a two-quart fruit jar with a cover which fits tightly and into it pour all the remnants of left-over paint. Stir it up, close the lid tightly and then turn the can or jar upside down. Since air doesn't get in, very little film will form.

True it is paint so mixed will not have a great many uses because of its off-color but will do satisfactorily for painting ladders, machinery, gates, feeders and the first coat on old lumber.

ENDGATE LATCH



Here's a simple, double-purpose latch for the endgate on a two-wheel trailer box. By the use of this latch, a cross rod is unnecessary since the latch keeps the sides from spreading as well as holding up the endgate.

Part A measures a quarter of an inch by one inch by four inches long and fastens near the top of the endgate with a couple of heavy stove bolts. Part B is the same size but fastens with a single bolt in order to allow it to swing up and catch when endgate is shut. To prevent part B from dropping down too far, a nail or a screw should be set as shown. In this way, Part A will hit the curved part of B and raise it.

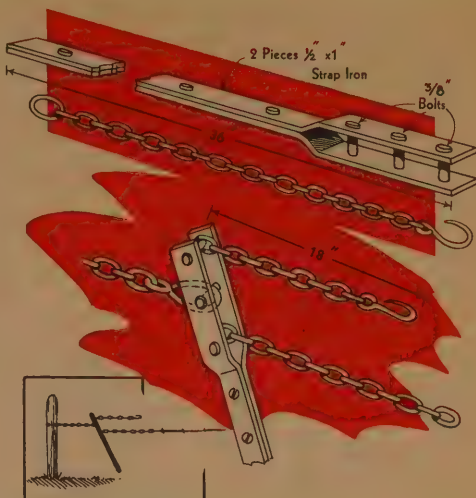
SIMPLE CONSTRUCTION OF ONE-MAN BARBED WIRE STRETCHER

A great many barbed wire stretchers on the market today, or which have been on the market, take two men to operate them but here is one which can be made at home and operated very effectively by one man. In fact, its construction is so effective that one man could break the barbed wire if he wasn't careful. A feature of this home-made barbed wire stretcher is that it will hold itself at any desired tension of the wire.

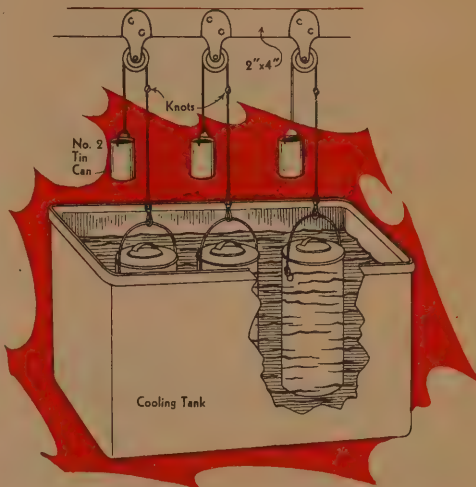
The construction is quite simple. The handle or lever part is made of two pieces of strap iron $\frac{3}{16}$ inches by 1 inch and 36 inches long. These two pieces should be bent as shown and three $\frac{3}{8}$ inch holes bored two inches apart at the end where the pulling chains are to be attached. Smaller holes should be bored in the handle in order to rivet the two pieces together. There should be about a $\frac{3}{8}$ inch or $\frac{1}{2}$ inch space between the bent ends. A piece of chain, five feet or more in length, should be bolted or riveted to the middle of the three end holes for the purpose of fastening the stretcher to a post. The end not fastened to the stretcher itself should have a hook in it which can be slipped out readily when you wish to unfasten the stretcher from the post.

An 18-inch piece of chain with a hook on one end should be bolted or riveted into the end hole and a similar piece, which may be longer, bolted into the third hole. A light log chain is the best for these short pieces although a trace chain with swivel and singletree hook fastened on by a split or lap link can be used.

This completes the stretcher itself, but it would be wise to have a piece of chain about five feet long with a mower guard fastened at one end to hold the barbed wire, while the hooks on the short chains are moved up on the links of the long chain as the lever is operated.



TO PREVENT CREAM CANS FROM TIPPING IN TANK



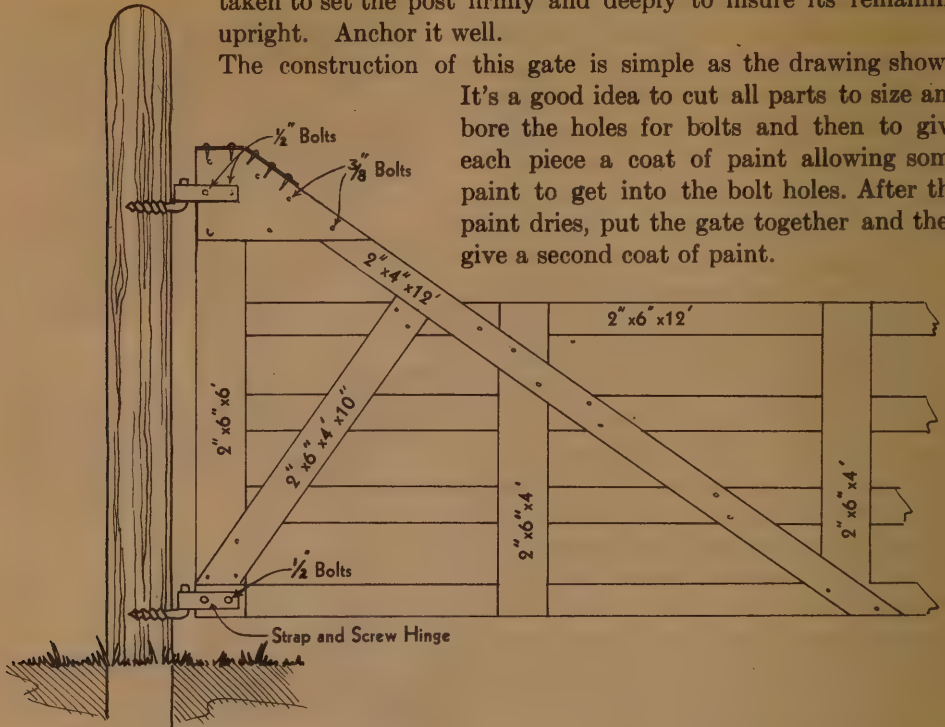
A simple arrangement of weights and pulleys as shown here will prevent cream cans from turning over in the cooling tank when the water rises. Ordinary Number 2 tin cans can be made into weights by filling them with cement and fastening them to the pulley rope with wire. Simple snaps should be placed on the other end of the rope to be hooked into the handle of the cream can.

NO-SAG FARM GATE

How many times have you seen a gate begin to sag just a few short months after it has been put up? The construction of the gate shown here makes it as nearly sagproof as a wooden constructed gate can be. Care must be taken to set the post firmly and deeply to insure its remaining upright. Anchor it well.

The construction of this gate is simple as the drawing shows.

It's a good idea to cut all parts to size and bore the holes for bolts and then to give each piece a coat of paint allowing some paint to get into the bolt holes. After the paint dries, put the gate together and then give a second coat of paint.



KEEP SHINGLES FROM SLIDING OFF THE ROOF

When you have a job of shingling to do, here's a simple way to hold them together and keep them from sliding off the roof. Remove the band from a bundle of shingles and then wrap an old inner tube around it. This will hold the bundle together and keep the shingles from sliding off.

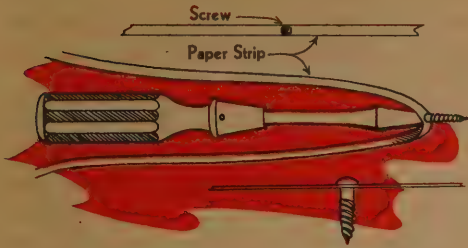
TO CLEAN POST HOLE DIGGER

Anyone who has ever tried to dig post holes in heavy clay or gumbo soil realizes the amount of time and energy spent in cleaning the digger. It's simple if the blades of the digger are dipped in a bucket of waste oil at regular intervals.

RAINY DAY JOB SAVES STEPS

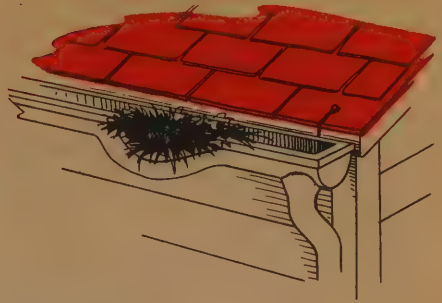
If the weatherman cuts loose with rain and prevents you from getting out in the fields, here's a job which will eventually save you a lot of steps. Go over the barn and the house and check up on all hooks and racks to see they are in the right places. Perhaps when they were first put up, they suited perfectly but now cause many unnecessary steps in order to be used. Move them to the handiest spots. Among the things to be checked should be harness hooks and feed boxes in the barn, racks for milking utensils, laundry tubs and pails and hooks for kitchen appliances. Put your head to work to save your feet.

SCREW HOLDER FOR TIGHT PLACES



Too many times the average person has been called upon to use a screwdriver in a place too small to permit holding the screw between the fingers while it is started. Here's a simple little idea to conquer the difficulty. Cut from a heavy piece of paper a strip double the length of the screwdriver itself and wide enough to permit the screw being punched through the center without tearing out too easily. Place the blade of the screwdriver in the slot head of the screw and then pull the strip of paper up alongside of the screwdriver on each side. Hold it tightly enough to keep the screwdriver in the slot but not enough to break the paper. After the screw is started, the paper can be thrown away.

CARE OF EAVES TROUGHS



Neglect of eaves troughs often causes more serious trouble. Proper care is simple and easy and should be done twice a year, in the spring and fall.

Gutters should have enough of a slope to allow water to run off quickly. Ends should be lapped in the direction of the flow.

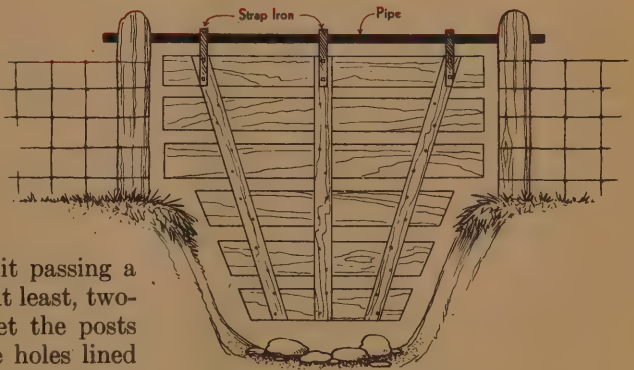
Sagging gutters should be corrected and broken joints resoldered.

Be sure that leaves, straw, chaff, birds' nests and other litter is not permitted to stand in the gutters and invite rust. When rust spots appear, they should be brushed clean and covered with a water-resistant paint.

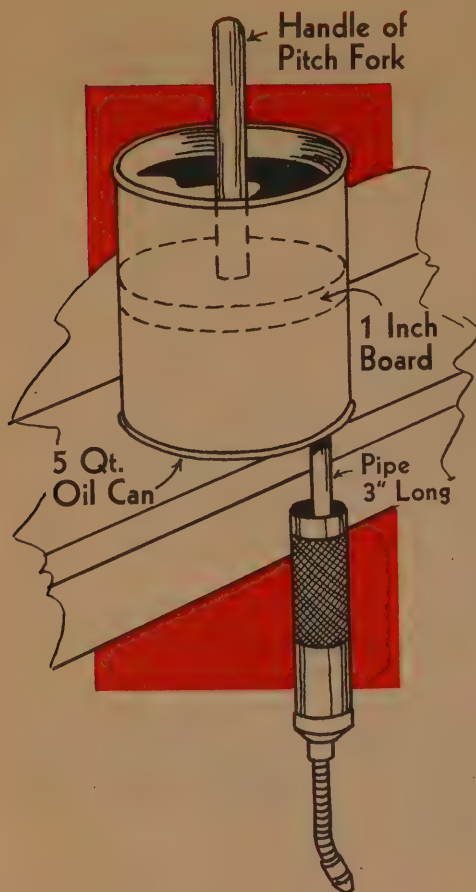
SIMPLE FENCE FOR DITCH OR CREEK

It's often a problem to know just how to fence a ditch or a creek to prevent animals from getting under the fence. This simple fence provides an answer. The two fence posts on each side of the creek, or gully, or ditch should have holes bored near the top large enough to permit passing a piece of pipe through them. At least, two-inch pipe should be used. Set the posts firmly in the ground with the holes lined up. When the pipe is in place, it's simple to make a gate as shown from scrap lumber and hang it by scrap iron from the pipe.

This same idea can be applied in another way by hanging boards of the proper weight by wire or rope from the pipe keeping them parallel by stapling the wire or rope to the board. Such a fence is more flexible than the one shown in the picture which is solidly put together.



GREASE GUN FILLER



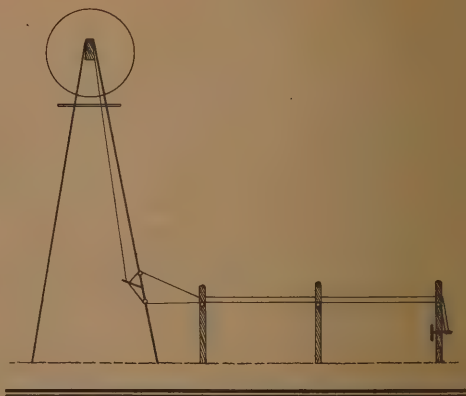
Filling a grease gun without proper equipment is usually a messy job. With this simple arrangement, a grease gun can be filled quickly, easily and without getting all smeared up. Take a five-quart oil can and cut an inch hole to the side of the center in the bottom. A piece of one-inch pipe three inches long should be soldered in this hole flush with the bottom of the can. To provide the pressure to force the grease into the gun, a wooden plunger should be made from a piece of one-inch board cut round to fit the inside of the can. A piece of pitch fork handle, a foot or so long, should be screwed tightly to this round piece of board to build a handle for forcing the plunger down against the grease. When the grease gun is to be filled, set the large

TEMPORARY WIRE EASILY TAKEN DOWN

Very often it's necessary to put up a fence or wire on wooden posts with the idea in mind that it will be taken down as soon as its temporary purpose has been filled. In such a case, instead of stapling the wire to the posts, place a wooden strip over the wire and then nail it to the post with the nails each side of the wire. It's much easier to pry off the strip than it is to remove staples and the wire is good for use again.

WINDMILL CONTROL

Here's a simple device of turning the windmill on or off without the necessity of going clear out to the tower. A heavy wire is run from the windmill control to a post near the house on which a steering wheel rod is fastened and from this point through pulleys back to the windmill control. By turning the steering wheel, the control lever is raised or lowered. A chain can be used instead of the wire so long as it is small enough to run through the pulleys yet strong enough to take the strain of lowering or raising the lever on the windmill tower.

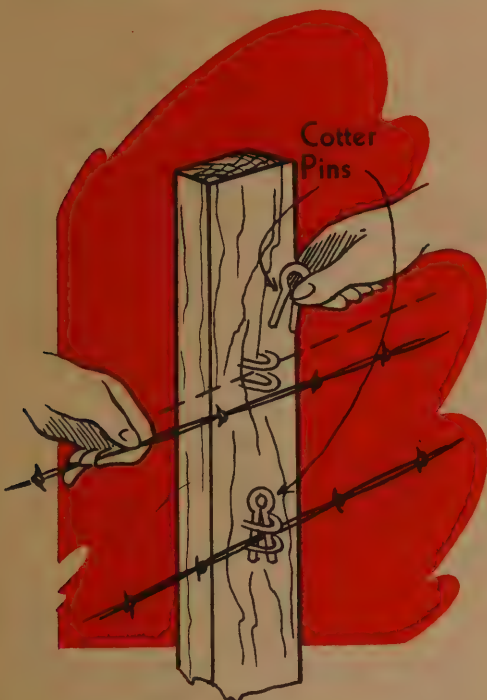


can of grease on the edge of the work bench. Hold the grease gun barrel under the 3-inch pipe and put pressure on the plunger. It fills the gun easily.

SMALL TANK IS TIME SAVER

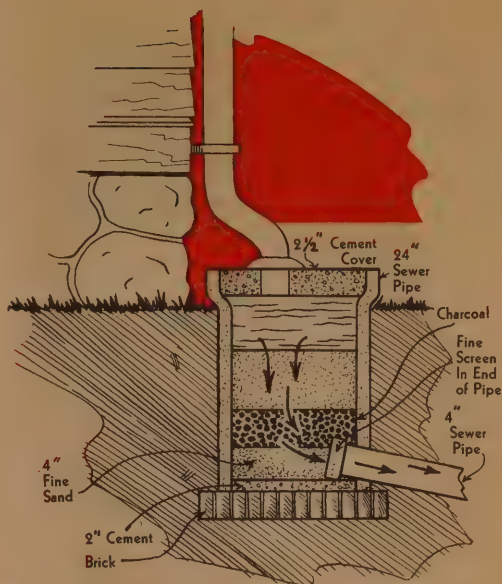
Whenever milk pails and other dairy utensils stand around, it makes a lot of extra work if they are not washed at once. A small tank near the well, fitted with a short piece of hose and a nozzle for rinsing out these utensils is suggested to avoid the extra work required when they are allowed to stand without being cleaned at once.

TEMPORARY FENCE FASTENER



Here's a way to fasten a temporary fence to the posts without all of the work of pulling staples when the fence is to be removed. Instead of stapling over the wire, use two staples in each post for each strand of fence. Place them about one-half inch apart and parallel to the strand. Pass the strand between the staples and while holding the wire against the post, insert a cotter key or nail through both staples in front of the wire. To remove the fence, just pull all nails or pins from the staples and the strand is free.

CISTERN FILTER

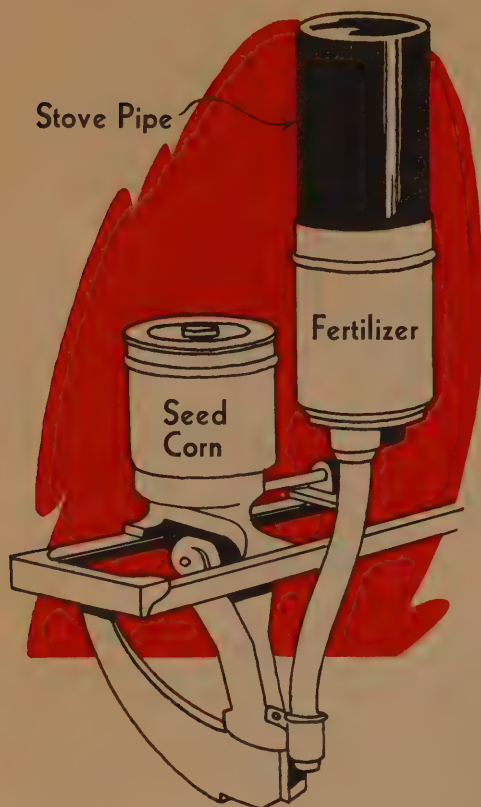


A 24-inch sewer pipe can be made into a very dependable filter for cleaning the water which runs to your cistern. The diagram here shows how the filter should be attached to the drain from the eaves troughs. The sewer pipe itself should be sunk into the ground clear up to the bow and a concrete cover 2 1/2 inches thick poured to fit in the bow with a passageway open for the drain itself.

The bottom of the pipe should rest on a foundation of brick with at least two inches of concrete poured into the bottom of the pipe after it is set on the foundation. A 4-inch sewer pipe should lead from the filter to the cistern itself.

After the 2-inch base of concrete has hardened, the filter may be filled. About 4 inches of fine sand should be placed in the bottom topped by 6 inches of coarse granular charcoal. The charcoal is for the purpose of eliminating odors and tastes but should be renewed frequently. Above the charcoal, there should be 12 inches of fine sand. Rock or coarse gravel should not be used except at the very top of the sand bed and then only to keep leaves and trash from clogging the flow.

FERTILIZER HOPPER EXTENSION



Too many stops to fill the fertilizer hopper on the corn planter can be eliminated by a simple means. A piece of stove pipe fitted into the inside of the fertilizer hopper will permit carrying a great deal more than the hopper formerly held. It may take a little adjustment or some bracing if the ground is uneven, but serves to cut down the number of stops for fertilizer.

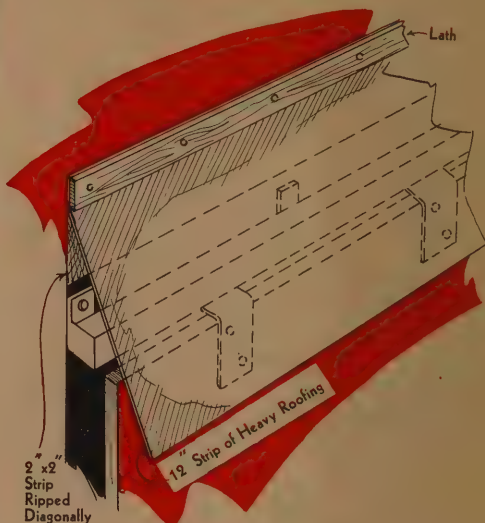
BARBED WIRE SAVES GATE

The urge of horses to rub against a wooden surface often causes them to break down a wooden gate. Protect the gate by stringing a single line of barbed wire at the height where the horses would naturally rub. You'll have no further trouble with a broken gate.

SCALE BEAM EASILY READ

It's almost impossible to keep the figures on a scale beam bright, shiny and easily read. Whenever they become tarnished or rusted, here's a tip. Clean the numbers and grooves with a nail point and then spread white lead over the numbers. Next wipe the surface lightly with a cloth. This cleans the raised numbers but leaves the grooves filled with paint.

WEATHER PROTECTION FOR BARN DOOR TRACK



Wind and weather often cause trouble with sliding barn doors and their track not only because rain drives in to wet the floor, but rust forms more quickly. Trouble can be stopped by cutting a strip of heavy roll roofing 12 inches wide and using it to cover the track and top of door as illustrated. A 2 inch by 2 inch piece ripped diagonally should be nailed onto the wall above the door first and then the roofing attached with laths used to fasten it securely. The diagonal piece causes the roofing to project away from the wall and keep it from rubbing on the track or door or from being caught by the rollers. If at any time, you wish to remove the roofing, it is done easily by prying the laths loose.

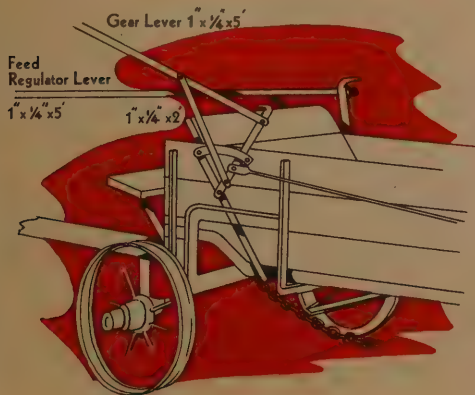
CLEANS HARROW WITHOUT STOPPING

When a harrow gets clogged with trash while you're pulling it behind your tractor, it isn't necessary to get down from your seat to clear out the trash if you use this plan. Tie a rope to the top of each lever of each section and then tie the other ends to the back of the seat. Anytime, the harrow needs cleaning, just pull the rope for that section. It's easy to raise the section in this way and clear it of trash.

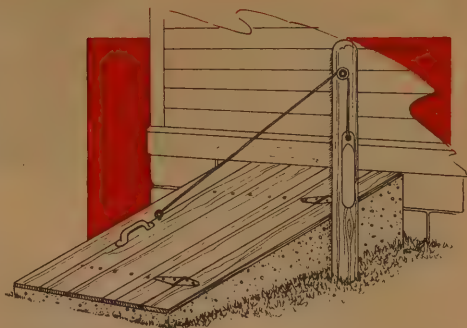
SPREADER CONTROL FROM TRACTOR

After your manure spreader is once in gear, you never need to get down from your tractor seat to control the feed or to take the spreader out of gear. The construction of the levers is simple. Four pieces of metal are needed. Two of them 1 inch by $\frac{1}{4}$ inch by 5 feet long and two 1 inch by $\frac{1}{4}$ inch by 2 feet long. A hole in the flat iron extension fits into the spreader lever for raising it up and down in notches fastened on with wire. The construction of the levers on both sides is alike. You can regulate the feed and take the spreader out of gear without getting off your tractor seat.

Since spreaders vary somewhat, this arrangement will have to be adapted to suit depending on how the leavers and notch lifters work. Similar extension levers can be worked out for other farm machinery which is pulled by the tractor.



COUNTER-BALANCE FOR CELLAR DOOR



Unless some means is devised for off-setting the weight of the cellar door, it is often extremely difficult for the women-folks to open it. Put a stout post next to the cellar way as shown in the picture with a pulley fastened near the top of the post and a light chain or rope run through the pulley and fastened to the opening of the door. A weight on the other end of the chain should be heavy enough to permit the door being lifted easily—and light enough to permit it being closed the same way.

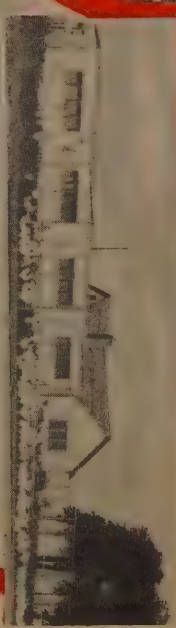
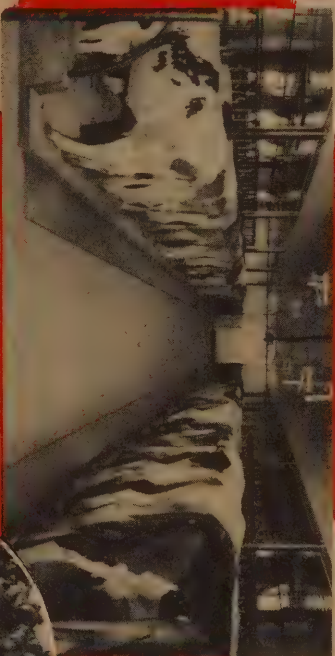
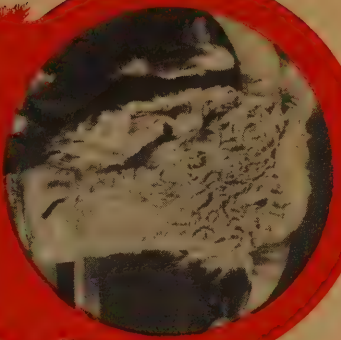
CARE OF WINDMILL

When the old, reliable windmill starts to squeak—look out. That means wear has started and oil or grease is badly needed. Every rattle means that some part is loose and needs tightening, or a bearing renewed.

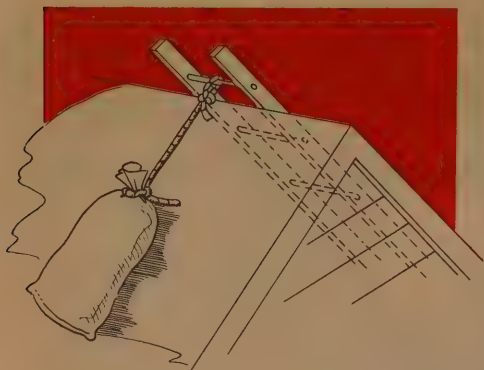
One of the most dangerous accidents is to have the wheel hub work loose on the shaft, and the wheel blow off. It pays to use a good grade of oil because a poor grade oil on a self-oiling mill may cause a lot of trouble in cold weather. Inspect and check this regularly.

In windy weather especially the guy wires and base connections should be examined and any movement taken up before it causes failure. Observe caution before going up on a tower. A slip may mean injury. Always fasten a rope with a non-slip knot around your waist or to a heavy safety belt and tie it to the tower. Be sure the wheel is lashed down so it cannot suddenly turn or flop.

WATKINS MINERALS AND VETERINARY PRODUCTS
Tested and Proved at Watkins Experimental Farms

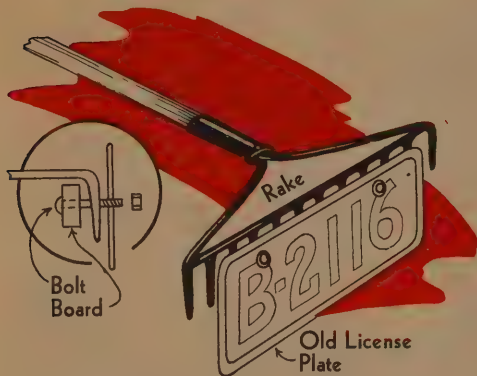


NO-SLIP LADDER HOLDER



When the pitch of a roof is too steep to permit standing or climbing it easily and you have no hook ladder, here's the way to lick the problem. Take a strong sack filled with sand tied securely to a piece of rope about four feet long. Tie the other end to the top rung of the ladder and let the sand bag extend on the opposite side of the roof from the one where the ladder is being used.

DROPPING BOARD CLEANER



Since the majority of poultry men are installing dropping boards because they make cleaning of the poultry house easier and also because droppings do not get on the floor to spread infectious diseases, this handy cleaner will aid greatly. All that is needed is a small board, a couple of bolts (preferably with winged nuts), and an old, automobile license plate or a piece of metal of a similar size and shape. These are fastened to an ordinary garden rake when needed and easily removed.

PREVENT FIRE LOSS

The majority of fires which cause loss could be prevented if proper care is taken. Almost every home or farm has such fire hazards which could be easily removed. For example; soot-filled chimneys, loose stove pipes, unprotected wood near hot fires and piles of paper or rubbish in the cellar or attic, are fire hazards which should not be permitted.

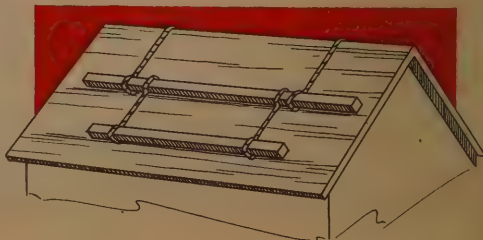
Avoid having open or leaking cans of gasoline or kerosene. Take your time in filling a lamp or lantern and do it away from an open flame. If you're cooking with gas, be sure the fire is turned off when finished.

Hay and bedding for the stock are invitations for a disaster by fire unless the lantern is hung up carefully and no smoking is the rule in the barn.

If your place is electrified, you have other things to watch; such as bare wires, loose connections, overloaded line and poorly protected switch or fuse boxes. Make electricity work for you. Don't dare it to set fires.

SHINGLING SCAFFOLD

Here's a simple solution to the problem of a scaffold on a building when there's a job of shingling to be done. The materials needed are a couple of 4"x4" pieces of a length to suit the job and some rope. The top or main piece should be the widest and the rope running from it should extend over the peak and be tied on the other side of the building. The scaffold lower down can be a shorter piece tied to the main one with rope and can be drawn up or shifted as needed. A large supply of shingles can be supported by the main scaffold while working below.



MAKE BROODER HOUSE DO DOUBLE DUTY

When brooding season is over, a portable brooder house can do another job for it comes in handy as a feed depot for the rest of the season. Haul it out to the hog pasture or chicken range and store feed supplies in it. This will cut down the number of trips necessary to haul feed.

SMOOTHS JACK ACTION

To avoid a jerky action of a motor-driven jack on a water pump, place a coil spring of suitable size on the piston rod so that the spring works against the stroke. This will permit the use of a smaller motor, for the spring itself would add power to the water-lifting stroke.

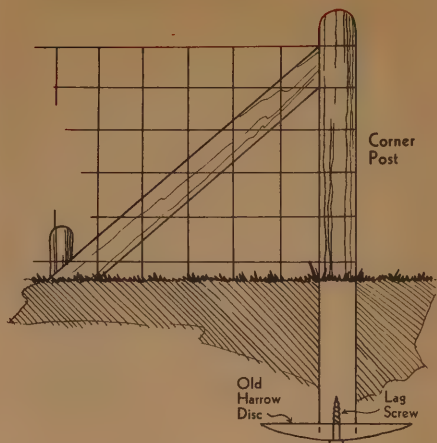
GATE LATCH FROM OLD HINGE



An old, scrap hinge cut according to the diagram makes an excellent gate lock in these days of scarcity of hardware. One-half of the hinge should be cut out as shown with the notch just wide enough to hold the frame of the gate or, in case of a picket gate, the first picket. Attach the latch to the post as shown but be sure this latch is inset into the post.

In case the post is a metal one, the answer to the problem would be to clamp a block to the post and then screw the latch to the block.

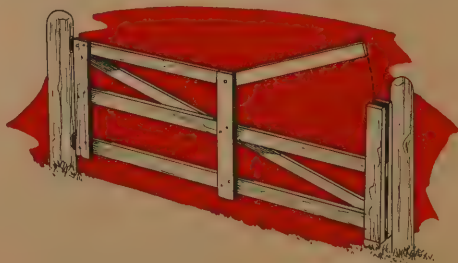
ANCHOR FOR CORNER POST



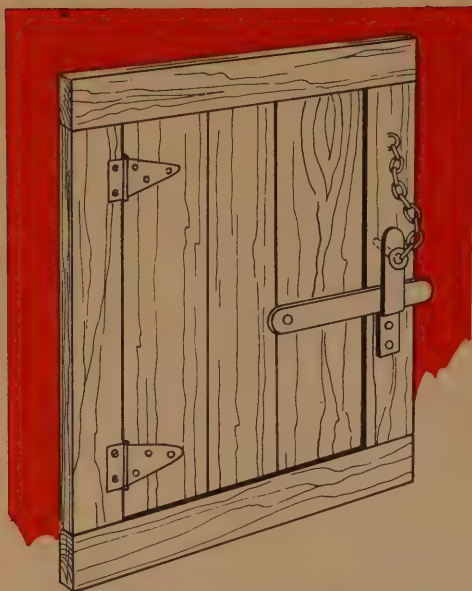
Many times corner fence posts, unless anchored in some fashion, are pushed out of the ground by frost or other causes. Here's a simple way to prevent this difficulty. Fasten an old disk harrow blade to the bottom of the corner post before setting it in the ground. Use a large lag screw and washer to attach the disk.

HINGED TOP GATE

Have you ever had trouble with pigs or other small livestock trying to follow you through a gate when you opened it? It's quite a job to keep them from it especially if you have your hands full. Here's a very simple idea to prevent that difficulty. Put a hinge in one half of the top rail of your gate so it will drop into a slot when lowered. Simply raising this top rail will permit you to step over the lower ones without actually opening the gate.



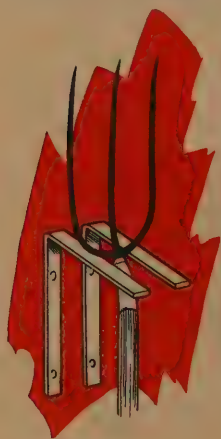
FOOLPROOF LATCH



A simple way to make a foolproof latch for a barn door or gate is illustrated here. Into the jam of the door just above the crotch into which the latch falls, a small chain is stapled, at the end of which is an eye bolt. This bolt is inserted in a hole in the crotch and also into the wood of the jam. No amount of rubbing by horses or cows is going to dislodge the bar and allow the gate to open.

PITCHFORK HOLDER

A couple of old shelf brackets, or even better, brace irons from an old wagon dash form an excellent holder for the pitchfork. They could be nailed or bolted to the wall just far enough to allow the fork handle to slide in readily with the tines up. A rack of this kind will hold two or three forks. Proper care of this sort will often prevent injuries.



FOOL THE MICE AND SAVE YOUR FEED SACKS

It's wasteful to allow feed sacks to lay around so mice chew holes in them. Take care of those sacks and protect them from mice. This is easily done by hanging them over a wire, stretched between two posts or between joists of the barn or granary room. At each end of the wire, a tin can should be strung to prevent the mice from crawling out on the wire to the sacks.

GET RID OF RATS!

It has been estimated by the United States Department of the Interior that the annual loss in the United States caused by rats amounts to \$200,000,000. Of this, the loss in grain alone amounts to \$100,000,000.

Every rat living on the farm can cost the farmer from \$2 to \$3 a year in feed alone.

The following suggestions are offered for cleaning up the farm:

Keep lumber piles, fence posts, wagon boxes and the like away from the cornercrib.

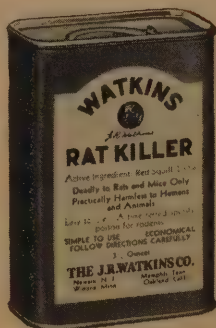
Have all feeding racks and cribs at least 18 inches off the ground so the dog can go after the rat.

Clear out old strawstack bottoms and don't let cornstalk and other fodder accumulate near the buildings.

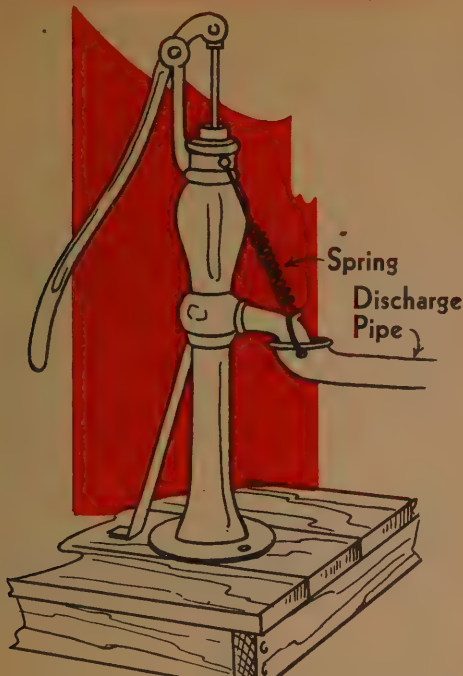
Keep grain and other feedstuff out of reach of rats as far as possible.

WATKINS RAT KILLER

Such a clean-up campaign should be followed by one of poisoning. Watkins Rat Killer is very effective in eliminating rats and mice and is harmless to livestock and human beings. Watkins Rat Killer is made from red squill and is 100 per cent active.



DISCHARGE PIPE SUPPORT



A heavy screen door spring is the basis of a handy means of holding up a discharge pipe on the pump. A loop of wire fastens the pipe to the spring which, in turn, is attached to the upper part of the pump. Instead of having to remove the pipe entirely to draw water, it can be pushed aside and swung back into place readily.

FLY FACTS Do You Know?

One pair of flies could produce 191,010,000,000,000,000,000 flies in one season?

Fly swatters mash the fly's body and aid in spreading germs?

That it's not a sin to get insects into your home, but it is a sin to let them multiply?

Cockroaches deposit an offensive liquid on foods, which imparts the "roachy" odor?

That baby fleas are tiny, hairy "worms" that live in cracks and crevices of floors and in basements?

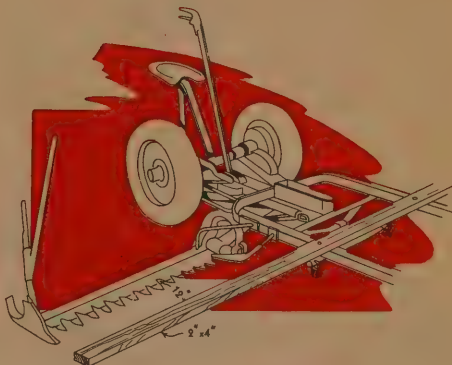
A good Fly Spray is a sure weapon for fighting insects and that Watkins Fly Spray meets the rigid specifications.

HOUSE FLY PUBLIC ENEMY NO. 1

The house fly carries germs of typhoid fever, summer diarrhea, tuberculosis, anthrax, cholera, infantile paralysis, dysentery, tapeworm eggs. It is one of the filthiest of all insects and can carry over 600,000,000 germs on its hairy legs and body. It can lay up to 1,000 eggs.

It feeds only on liquid foods and vomits to soften solid foods. The house fly does not bite. Those that bite your ankles are stable flies. The house fly does not grow from small flies, but develops from maggots that live in manure piles, privies and similar filthy places. The proper use of Watkins Fly Spray is the best and simplest to kill and control flies.

HAY WADDING ON MOWER



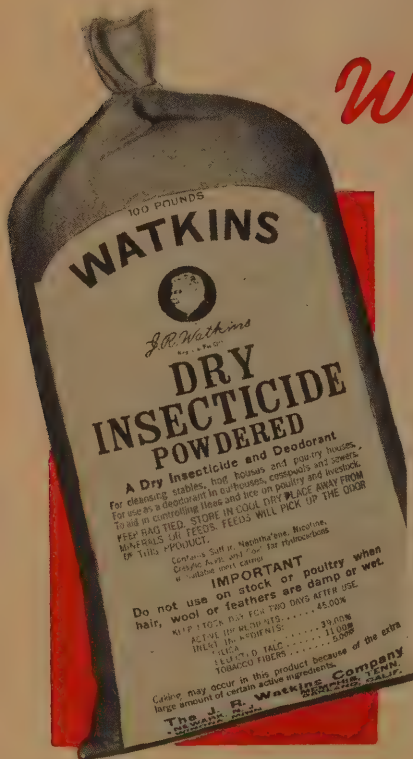
Have you ever had difficulty with hay wadding up in the swath while you were mowing? This simple idea will remedy the difficulty. A 2 inch by 4 inch piece long enough to extend out beyond the edge of the mower bar is bolted on the tongue of the mower about a foot ahead of the sickle itself. This bar pushes the hay or cane forward instead of letting it fall backwards. The illustration shows how the bar should be attached to a one-horse mower. A two-horse mower would require a little different attachment since there would be only a single bolt through the tongue. In this case, the bar should extend about three feet to the left of the tongue and a chain run from that end back to the frame of the mower.

WATKINS LIQUID DIP

INSECTICIDE DIP AND DISINFECTANT

Watkins Liquid Dip is an effective germicide, antiseptic and parasiticide. It is six times as strong as carbolic acid when tested against the typhoid germ.

You will find Watkins Liquid Dip very valuable for disinfecting barns, outhouses and chicken coops, for dipping stock for ticks and scab and for delousing. It can be used for superficial wounds and cuts on livestock. In the household, a one to 50 solution makes an excellent and economical cleanser, disinfectant and deodorant for washing or scrubbing dirty, foul and musty places.



Watkins Dry Dip

POWDERED DRY INSECTICIDE

Watkins Dry Dip is a good delousing agent and deodorant in powdered form. Use it as a deodorant in outhouses, cesspools and sewers. It is an effective aid in controlling lice on hogs, cattle, horses and poultry.

It is an excellent preparation to use on the floors of barns and sheds and to sift into the bedding. One or two handfuls mixed with a 10-quart pail of ground limestone and sprinkled over barn floor will deodorize, prevent slipping and help keep the floors clean. Use it for deodorizing outhouses, cesspools, garbage containers and sewers.

50% Active Ingredients

CHAPTER V

MISCELLANEOUS HINTS

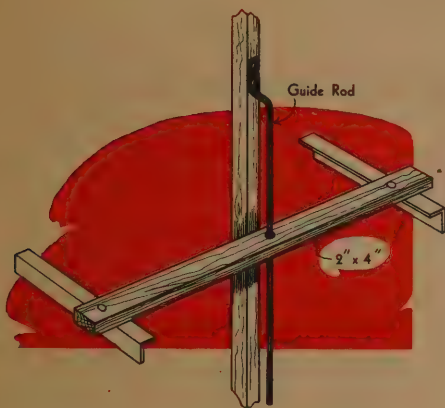
CLEANING FEED CUPS

Here are a couple of ideas for cleaning feed cups of grain drills, grass seeders and fertilizers. If yours is one of those fortunate families owning an electric vacuum cleaner, its small attachment will do the job in a jiffy. Before using the vacuum cleaner, stir up whatever residue may be lodged in the feed cup with a piece of wire.

If you lack the vacuum cleaner and the electricity to run it, the next best way is to use an automobile tire pump and force the left-over seed or whatever it may be out of the feed cup.

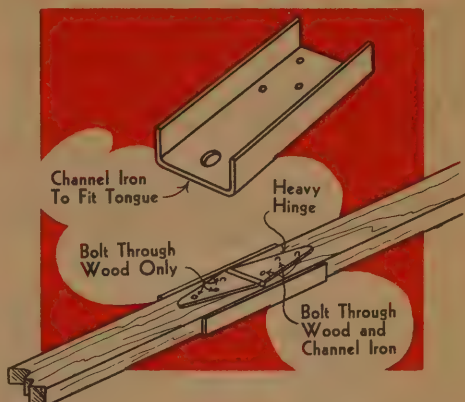
Regular cleaning in this way helps to prevent corrosion and uneven planting as well as to remove any weed seeds.

GUIDE ROD FOR WINDMILL SHAFT



Unless some method is used to avoid wear, a windmill shaft will often cause trouble. To prevent this difficulty, try this simple method. Bolt guide rods and run them through 2x4's bolted to the windmill frame. These rods sliding up and down through the hole in the 2x4 will prevent wear on the shaft itself.

ADJUSTABLE WAGON TONGUE



Quite frequently the average wagon or implement tongue is too long to be used with both horses and tractors. Instead of having to change the complete tongue, try this method of hinging the tongue to adjust its length.

Measure the length of the tongue and cut it in two so that the front part is shorter than the piece still attached to the wagon.

Cut a piece of channel iron to fit the tongue itself. The large hole should accommodate a heavy bolt which can be removed when the tongue is folded back. The hinge shown here should be bolted firmly through the channel iron and tongue on the longer end—that is, the end still attached to the wagon. The other half of the hinge should be bolted through the wood only and not the channel iron.

When the channel iron is bolted firmly into place, the tongue will be of the proper length to use with horses. When the bolt holding the short end of the channel iron is removed, this end of the tongue can be bolted back on the hinge, leaving the bolt hole for a hitch to the tractor.

PROPER CARE OF YOUR TRACTOR—PRINCIPAL POWER UNIT ON MOST FARMS

Under present conditions, the tractor is the principal power unit on most farms and, due to wartime production needs, replacements are difficult. Consequently, even greater care must be given to the tractor to keep it in top condition for its job. Tractor manufacturers provide charts which indicate the lubrication needs and the various things which must be done to keep the tractor operating at its best. Study the chart and directions you received when you bought your tractor. If you've misplaced it, talk to your local oil company. Many of them are able to provide similar charts.

During the time when the tractor is operated at its peak capacity, there is always a tendency to overlook or neglect the simple things which should be done. You put in long hours and so does your tractor. Just as you need rest, food and water, so the tractor needs certain things in addition to fuel. Proper lubrication is highly important and your tractor should be checked carefully before the busy season to see that all working parts are in good condition. The more care you give it, the better it will perform for you.

Precision Parts Require Care

Although the tractor is built for heavy, rough work and is ruggedly constructed, it has many precision parts which must have the best of care to insure long, efficient, trouble-free operation. An overhaul job at regular intervals by your tractor dealer's service department will save considerable money for you in the long run.

Here are a few, simple suggestions which it will pay you to heed.

1. There are two kinds of spark plugs for tractors. Be sure you use the one suited to your needs. The cold type plug operates in gasoline power tractors while the hot type is required for distillate burning machines.

2. The fuel you use requires the manifold to be set in accordance. Do it.

3. Ignition points and spark plugs should be cleaned and adjusted regularly.

4. Valve rocker arms require regular oiling. Keep the valves adjusted carefully as recommended.

5. Proper adjustment of the carburetor is necessary for efficient operation.

6. As the usual thing, the air filter should be cleaned daily, but twice daily is a good rule when the tractor is being operated under extremely dusty conditions.

7. Breather caps on the crank case should be kept clean.

8. Check the tension of the fan belt and keep it tight all of the time.

Warm Up the Engine

9. Instead of starting to drive the tractor as soon as the engine is running, give it a chance to warm up before hand. In this way, all bearings will get the proper flow of oil and wear will be prevented.

10. Check the nuts and bolts and keep them tight.

11. Follow the recommendations of the manufacturer regarding the proper pressure for the inflation of tires.

12. *Go back over this check list and be sure that each one of these tasks is done regularly to insure good performance from your tractor.*

13. Careful lubrication with the correct oil and grease as recommended by the manufacturer will do a great deal to insure a longer life for your tractor. It's your best insurance against breakdown.

14. The few minutes spent in checking the oil level in your tractor will prove a good investment. *Don't guess about the oil level.* It could cost you a lot of money.

15. Similarly, don't use just any old oil, but be sure you get a good grade of the type recommended by the manufacturer of your machine.

16. Oil should be changed whenever the end of the testing "stick" shows the

oil to be extremely dirty. In this simple way, you avoid sludge formation which obstructs oil flow, damages bearings, pistons and rings and causes waste of fuel and reduces power.

When changing oil, be sure that the crankcase is flushed out thoroughly before refilling. Flushing it out does a double job. It not only gets rid of the sludge and old oil but carries away bits of metal, grit and dirt which might have gained entrance to the crankcase.

Replace Filter Regularly

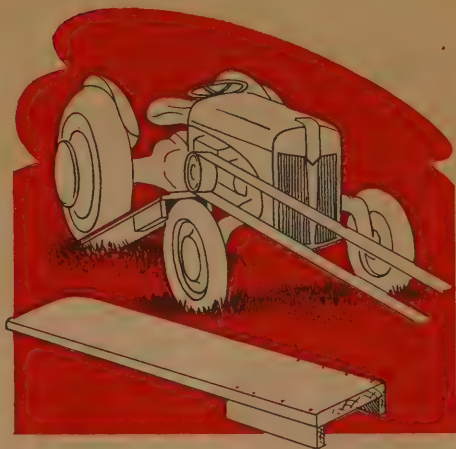
The average tractor today is equipped with an oil filter containing a replaceable cartridge type oil filter. This filter removes carbon, dirt, metal particles and other foreign substances and helps to prevent the formation of sludge, but it often becomes clogged and should be replaced regularly in order to assure you that the tractor is receiving proper lubrication with good, clean oil. Failure to keep the oil filter operating in top shape will cause increased oil and fuel consumption, valve and ring trouble, excessive wear and loss of power. If your filter is not of the replaceable cartridge type, be sure to take the entire filter off regularly and clean it with kerosene.

It's a good idea to keep a regular record of the hours you run your tractor. Your lubrication chart for your tractor will tell you how often each part should be oiled or greased. Be sure to follow directions carefully for neglect of a single part may cause considerable trouble and expense.

AVOID TRACTOR FIRE

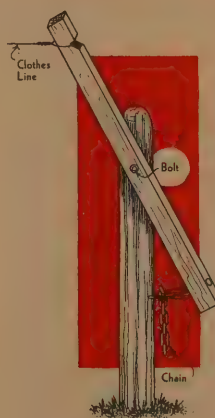
You've seen gasoline trucks going down the highway with a chain dangling and bouncing along behind. The reason is to prevent the possibility of fire from static electricity. Tractors frequently develop static electricity particularly if a belt-drive is used. Follow the same plan used by gasoline trucks by running a length of chain from some metal part of the machine to the ground. This shorts the static and prevents fire.

BLOCK FOR TRACTOR



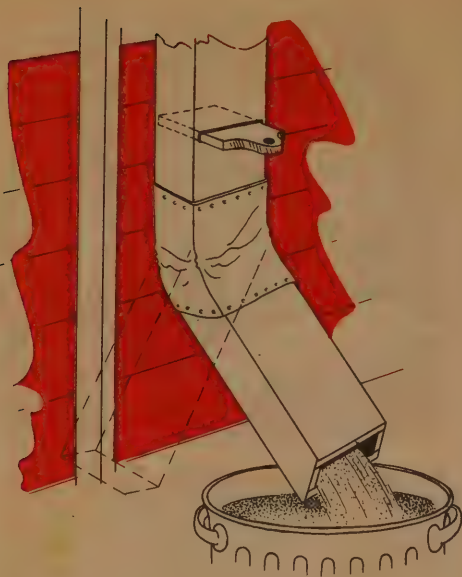
Whenever you are going to use a rubber tired tractor belt drive, try this method of stopping the tractor from rolling forward. Take a plank long enough to reach from the top of the front wheel to the point where the back wheel rests on the ground. Bevel off or round off the end which goes under the rear wheel. At the other end, nail a couple of side pieces to prevent the plank from sliding off the front wheel. This simple rig is very effective in keeping the tractor from rolling forward and the front end from bouncing.

CLOTHES LINE TIGHTENER



The old idea of a pole to prop up a clothes line to keep long pieces of laundry from dragging on the ground is a nuisance, and can easily be eliminated with this idea. The clothes line itself should be attached to levers at each end, which are bolted to the posts. Each lever has a chain with large links permitting the clothes line to be tightened to the desired degree and being held there by slipping the right link of the chain over a hook on the back of the pole.

SWIVEL SPOUT



Here is a time saver when it comes to filling drums, sacks, or baskets. Place a hinged spout on your grain chute. Do this by cutting the chute and then connecting it with a sleeve made of heavy canvas, leather or even an old inner tube if such a thing is obtainable. When joining the two ends, leave ample room to permit the lower end to swing from side to side as needed.

MILK PAIL HOOK



use, this rod will fold over to one side out of the way.

Instead of driving nails for hanging the milk pail, try this method, and you will have something which will fold out of the way instead of sticking out to catch on clothing. Put two eye bolts into a stud and through these run a one-half inch rod as shown in the picture. When not in

RID GRAIN BINS OF VERMIN

A good rainy-day job when it's impossible to get out into the field is that of making a thorough cleaning of grain bins in order to get rid of mice, rats and insects which cause plenty of loss. Every storage bin should be cleaned thoroughly and made vermin and rat-proof as nearly as possible.

Walls, ceilings and floors in grain bins should be swept carefully and all of the sweepings burned at once or fed to the chickens to get rid of the insects which might be in the grain.

The next step is to give the entire bin a thorough spraying with Watkins Fly Spray. Use about a gallon for each thousand square feet of surface. Let it soak into the cracks and crevices. Cover the walls, floors and ceilings thoroughly. Keep the bin closed up for 48 hours and then spray it over again. After this, let it air out.

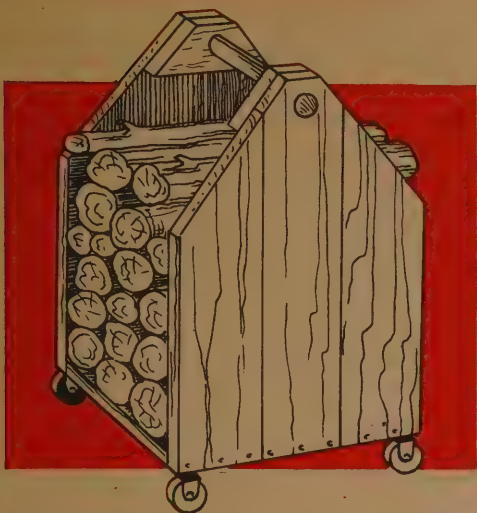
Rats and mice can be controlled by using Watkins Rat Killer. It is harmless to human beings and all animals except rodents. Granary doors should be equipped with self-closing and latching devices of some kind. A simple one is that of using a heavy weight on a rope with a drop latch.

If you have trouble with rats gnawing through the floor, there's a way to prevent that, too, although it takes a little work. Lay a half-inch mesh hardware cloth and then lay your smooth flooring on top of this.

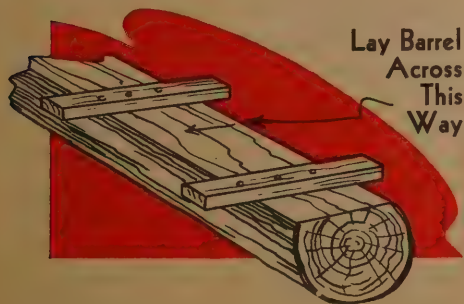
TO THAW DOOR LOCK

Everyone who cares for his car properly and keeps it washed regularly has probably had trouble with a door lock becoming frozen. To thaw out the lock simply heat the key with a couple of matches and then insert it in the lock. It's a good idea when the lock is thawed out to dip the key in antifreeze and turn it in the lock several times to keep the moisture from freezing again. If you use denatured alcohol, be sure that none of it gets on the finish around the key hole.

PORTABLE WOOD BOX



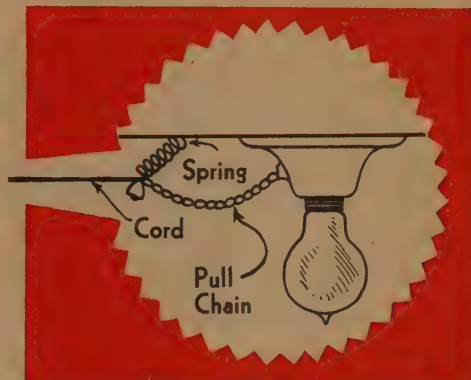
The old-fashioned wood box has always been a nuisance with the muss it causes when you have to bring in an arm-load of wood, and dump it into the box. Here's a box that will save all of that fuss and bother and also make it easier to bring in the wood. It can be made very easily from two sides and the end of an ordinary box, strengthened by reinforcing it as shown. Place four casters on the bottom, and your wood box can be put wherever wanted. Bringing in the wood from the shed then is a job of only getting it to the door and placing it in the box without having to make a muss on the floor or carrying the wood all the way into the kitchen. Paint it to match the woodwork in the kitchen and everyone will be happy.



Handy Barrel Tipper Described at Right.

"REMOTE CONTROL" LIGHT SWITCH

Everyone hates to stumble around in the dark, feeling for a light switch. If your place is electrically lighted and you want to avoid that stumbling around, here is a simple idea to control the light at a distant poultry house, shop or shed. The illustration tells the story. All you need is a common pull socket with a light spring to hold the pull chain up in line with the pull of a cord or light wire which runs to the house. This idea can be applied to a light in the basement or similar place and save a lot of stumbling and fumbling.



HANDY BARREL TIPPER

(See Illustration Bottom of Left Column.)

A full drum of Mange Oil, Fly Spray, or Lubricating Oil is quite a job for one man to handle. This simple device makes it possible for one man to drain a barrel by himself.

A short length of a log from 12 to 18 inches in diameter, and a couple of feet long should be flattened on one side to make a face about 10 inches wide. Across this nail a couple of 2x4's 12 inches long. The distance between them should be approximately a foot.

To use this device, simply tip the barrel over across the log so it rests between the two cleats. The faucet should be down when this is done. Roll the block, and no lifting is required.

HOW TO ESTIMATE YOUR NEEDS ON BELTS AND PULLEYS FOR FARM MACHINERY

Here are a few simple rules and figures to follow in estimating your needs when it comes to pulleys and belts on farm machinery.

HOW TO FIGURE LENGTH OF BELT

Frequently, it is difficult to actually measure with a tape line the length of the belt required. When this condition prevails, use the following figures. Measure the diameter of the two pulleys and add together, then divide the results by two. Multiply this answer by $3\frac{1}{4}$. Now, measure the distance between the centers of the shafts of the two pulleys. Double this and add it to the previous figure to give the total length of belt required.

Avoid placing connecting shafts directly over each other. The reason—the belt will be kept much tighter to do a more effective job.

Unless conditions make it impossible, the angle of the belt with the floor should not be over 45 degrees. Also, whenever more than one belt runs from a shaft, the belt should be run in opposite direction in order to relieve the friction on the bearing, which would occur if the belts were all pulled the same way.

ESTIMATING BELT SPEED

In order to get the speed of a belt and speed per minute, multiply the diameter of the pulley in inches by 3.1416. This gives the circumference of the pulley, and the result multiplied by the number of revolutions the pulley makes will give you the belt speed in inches.

TRANSMISSION OF HORSE POWER IN PROPORTION TO WIDTH OF BELT

The width of a belt and the horse power for a given speed are in direct proportion. For example, a 4-ply belt 16 inches wide running at a certain speed will transmit eight times as much power as another 4-ply belt only two inches wide and running at the same speed.

ESTIMATING H. P. TRANSMITTED BY BELT

Multiply the width of the belt in inches by its speed in feet and divide the result by 800. The answer will be the horse power for a 4-ply belt. To get the answer for a 6-ply belt, you divide the result by 600 instead of 800. Similarly, to get the answer for an 8-ply belt you divide the answer by 400 and for a 10-ply, divide the result by 350.

FINDING REQUIRED PLY OF BELT

If you know the horse power to be transmitted and the belt speed, it's simple to figure the ply of a belt necessary for a given width. Multiply the given horse power by 800 and the given width in inches by the belt speed in feet. Divide the first result by the second.

If the answer is one, or nearly one, a 4-ply belt is needed. If the answer is $1\frac{1}{2}$, a 6-ply belt is required and if the answer is from $1\frac{3}{4}$ to 2, you'll need an 8-ply belt. If the answer is 2 to $2\frac{1}{4}$, a 10-ply belt is needed.

ESTIMATING WIDTH OF BELT

Suppose your problem is to find how wide a 4-ply belt you need to economically transmit a given horse power at a given belt speed per minute. To get the answer, multiply the given horse power by 800 and divide the results by the given belt speed. The answer will be the width in inches of a 4-ply belt.

To estimate the width of a 6-ply belt needed—multiply horse power by 600 and divide the result by the belt speed.

To find the width of an 8-ply belt needed—multiply the horse power by 400 and divide the result by belt speed.

To find the width of a 10-ply belt needed—multiply horse power by 350. Divide the result by belt speed.

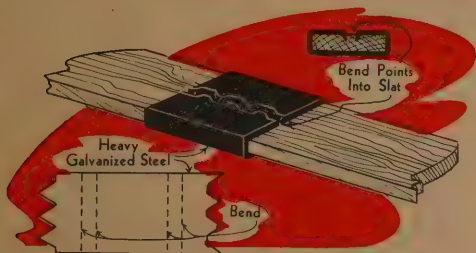
TO FIND SPEED AND DIAMETER OF PULLEYS

The product of the diameter and speed of a driving pulley equals the product of the diameter and the speed of the driven pulley. Consequently, if the speed and diameter of the driving pulley are given, multiply them together and divide by the diameter of the driven pulley to find the speed of the latter. Or, divide by the speed of the driven pulley to find its diameter.

EXAMPLE: The drive pulley on a tractor is $8\frac{3}{4}$ inches in diameter and runs at 1,000 R. P. M. What size pulley must be used on a thresher cylinder shaft that must run at 1,200 R. P. M.?

Eight and three-fourths times 1,000 equals 8,750. Divide this by 1,200 and you get 7.29. Since pulleys are made in certain standard diameters, it is necessary to use either the next size smaller—7 inches in diameter or increase it to $7\frac{1}{2}$ inches and increase the engine speed a bit. In case of using a 7-inch pulley, the slight slippage of the belt will reduce the speed to the correct number of revolutions per minute.

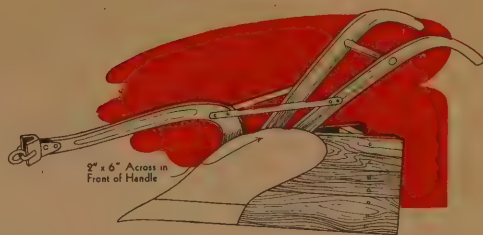
JIFFY REPAIR FOR BROKEN BINDER SLAT



Many times a broken binder slat can cause a great deal of delay if time is required to replace it completely. To avoid this, try repairing the slat as shown.

Use heavy gauge galvanized sheet metal and cut it as shown to fit the size of the slat. When bent around the slat, the piece will interlock and should be bent to dig into the slat itself, thus holding the repair in place without the necessity of holding nails.

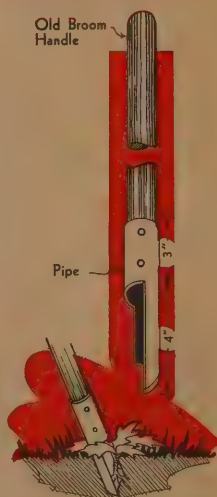
HOME MADE SNOW PLOW AND DITCHER



An old walking plow can quickly be turned into a very effective snow plow or shallow ditcher by means of attaching the simple arrangement shown. A piece of wood two inches by six inches long extending across the front of this V and over the plow handle holds the V firmly in place. A shallow ditch can easily be dug with this arrangement permitting water to drain away in wet seasons and preventing a badly muddled yard. An ordinary furrow would fill in quickly whereas a shallow ditch would remain open.

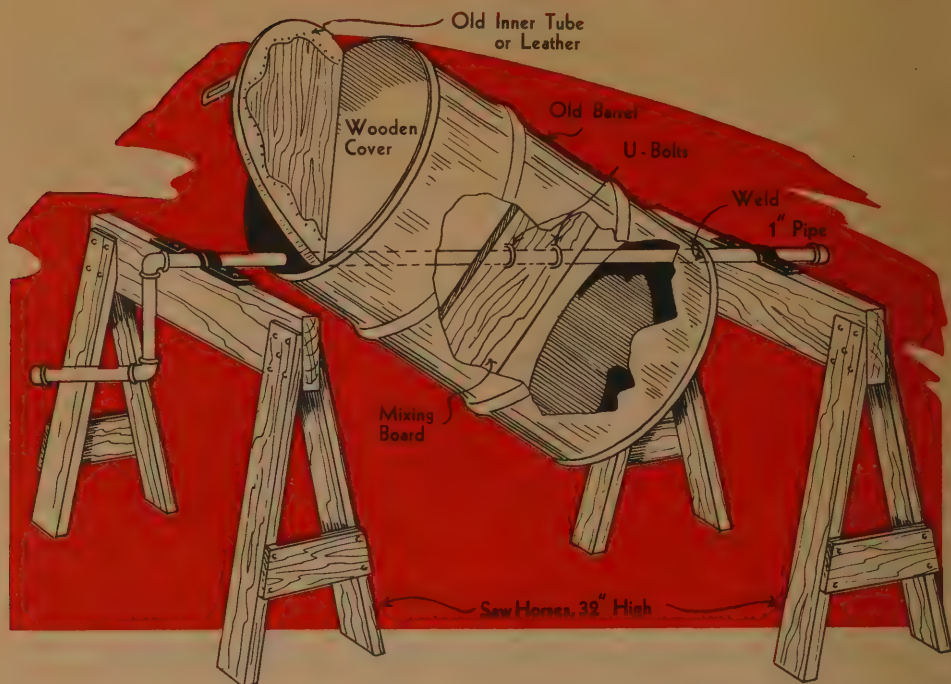
WEED SPUD TO RID GARDENS AND LAWNS OF TOUGH WEEDS

A simple and very effective means of ridding gardens and lawns of tough rooted weeds can be made by shaping a piece of pipe as shown. The size of the pipe depends entirely upon the diameter of the handle you wish to use. It may be that an old broom handle will not be quite large enough to suit you, so the pipe should be larger in accordance.



Use a metal hack saw to cut the pipe in half for a distance of about four inches and then saw out one half. Use a good file to sharpen the blade end of it, and then drill a couple of holes through the pipe in order to fasten it securely to the handle.

MAKE YOUR OWN FEED MIXER

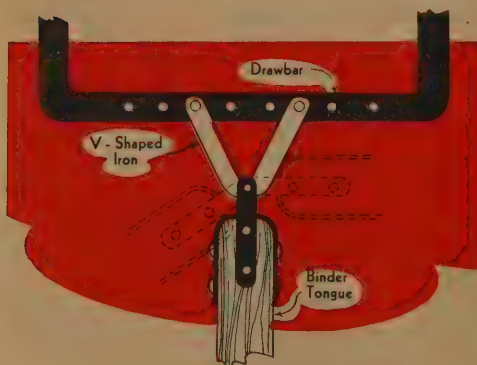


Unless you are accustomed to mixing feed in large quantities, this simply constructed feed mixer or seed treater will do a topnotch job for you. The materials needed are an old 50-gallon oil drum, pipe to make the axle and handle as shown, some scrap lumber, a hasp and an old inner tube if obtainable. A couple of pieces of scrap steel to hold the axle in place on the saw horses should be easy to get.

The two saw horses should be constructed 32 inches high and in the center of these a notch should be cut to take the one-inch pipe. The top end of the sealed drum should be cut out and a wooden hinged cover substituted.

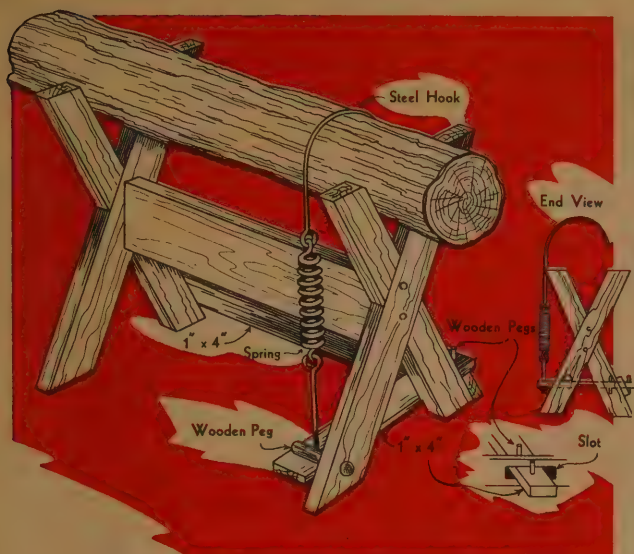
Notice that the pipe runs on a diagonal to the barrel. This uneven action plus the mixing board in the lower part of the barrel will stir up the feed or seed thoroughly and do an excellent job.

SIMPLE BINDER HITCH PREVENTS BREAKAGE



Breakage of binder tongues by sharp turns on the part of the tractor can be eliminated if this simple hitch is used. A V-shaped attachment can be made from any iron a little lighter than the draw bar and should be attached as indicated in the sketch. It is easy to see from the drawing how a tractor could turn at a sharp angle to the binder tongue without causing it to break. This hitch is especially good for machines having short draw bars or on which tire fenders or frame parts extend out.

WOOD HOLDER FOR SAWBUCK



Many men would rather use a one-man crosscut saw instead of an ordinary buck-saw with their sawbuck and as a result have difficulty holding wood in place on the sawbuck. This is particularly true with a round log which doesn't want to hold still. To overcome that situation, we recommend the little gadget shown here.

It's an attachment for an ordinary sawbuck. From a one-quarter inch or heavier metal rod, make a hook large enough to go over the largest log you expect to saw. To the eye end of this hook, fasten a good strong spring

such as you might get from a cultivator and then fasten this with an eye bolt to a 1x4 hinged as shown to a brace on the far side of the buck. Put a good strong peg or spike in the lower part of the buck leg on the near side. Then when the leg is in place and the hook put over it, you can step on the piece of 1x4, pull the spring tight and then keep the tension by sliding the 1x4 under the peg where it is held while you saw.

FRUIT PICKER



It seems that the finest fruit is always at the top of the tree and the hardest to reach. This simple picking basket solves the problem of how to get that fruit without breaking limbs on either the tree or the picker. It is made of stiff wire and should be made so that two

or three pieces of the wire extend beyond the edge of the basket itself as end hooks which can be used to pick the apples or other fruit and drop them into the basket. The handle can be made from an old clothes pole or a bamboo fish pole cut to length. It's a good idea to pad the bottom of the basket to prevent bruising the fruit.

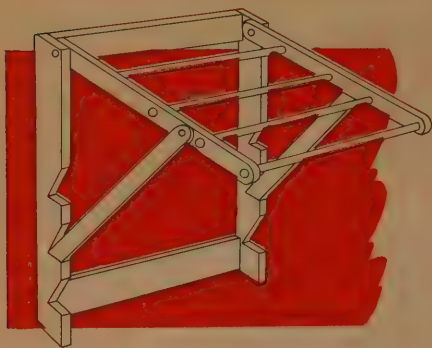
SUBSTITUTE FOR THERMOS

Under present conditions, it is almost impossible to get new parts for thermos bottles. Here is a simple way to keep drinks hot or cold for men in the field. All you need is a half gallon jar with screw top, a large oatmeal carton, and some newspapers or saw-

dust. Fill the half gallon jar with the liquid, put the lid on tight, and then put the jar in the round oatmeal carton. If you are using sawdust, put about one-half inch in the bottom of the oatmeal carton before putting in the jar. Then fill the carton around the jar with the sawdust or pack in crumpled newspapers.



FOLDING DRYING RACK



A clothes drying rack which can be folded out of the way readily is a handy gadget to have around. This one is simple in construction and yet very handy. The material needed is as follows: four broom handles or large towel rods $2\frac{1}{2}$ feet long, four bolts $2\frac{1}{4}$ inches long, and seven pieces 1 inch by 2 inch by 3 feet. The diagram illustrates how they should be cut and joined together. This rack can be hung from the wall by screw hooks or even be nailed in place if you wish it to stay permanently. When the brace on each side is removed from the notch, the entire rack can be lowered to hang flat to the wall.

GETTING RID OF HORNETS

Hornets can often be a nuisance and often cause trouble by building nests in inconvenient places. Here's a simple and effective way to get rid of a hornet's nest on ceilings or walls. All the equipment you need is a large lard pail and a flat piece of tin big enough to cover the top of the pail.

Slip the large pail over the nest and then cut it loose by sliding the piece of tin between the pail and the wall of ceiling. Be sure you hold that piece of tin tightly to the pail when you take it away from the wall.

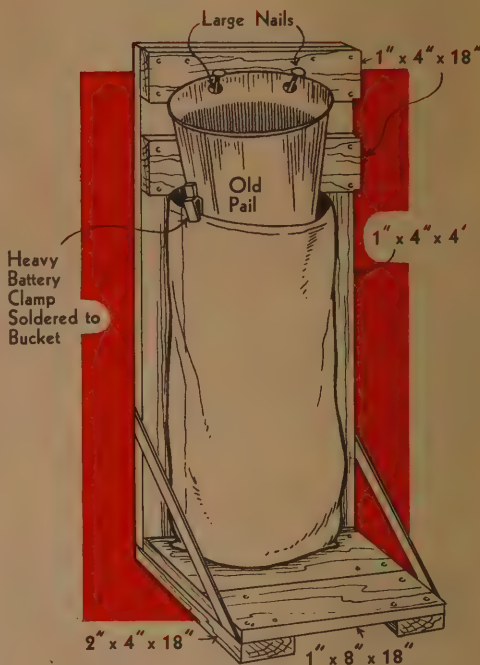
Once you have the nest in the pail, the problem is what to do with it. Simply put the pail and tin cover in a larger pail of boiling water and let it stand for 15 minutes. The hornets in that nest will not bother you anymore.

TRAPPING YELLOW JACKETS

Yellow jackets can be trapped by putting narrow-necked bottles partly filled with molasses, water and a little yeast in the fruit bushes where the insects eat.

Watkins Fly Spray is very effective for destroying hornets and yellow jackets.

SACK FILLING RACK



How many times have you wrestled with a sack you are trying to fill at the same time you tried to hold a pail or shovel? This simple arrangement makes it easy for you to fill sacks alone. The rack is simply constructed as shown in the picture, and to the top an old bucket or coal scuttle with the bottom out is hung by nails. To this bucket, hooks or a couple of heavy battery clamps should be soldered or bolted for use in holding up the sack. Hook your sack in place, and the mouth is kept open while you do the filling job.

TABLE OF BODY TEMPERATURES OF FARM ANIMALS

AVERAGE NORMAL RECTAL TEMPERATURE

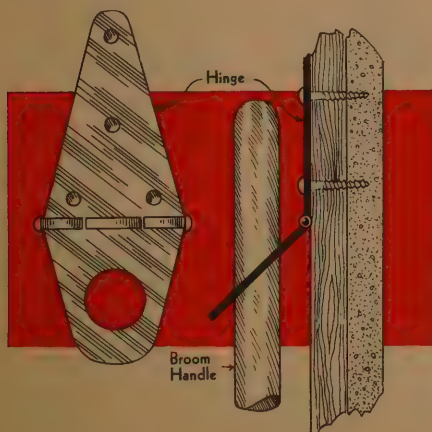
Ass.....	98.5°
Cow.....	101.5°
Dog.....	101-102°
Fowl.....	106.9-109°
Goat.....	103°
Horse.....	100.2°
Pig.....	101.7-103.3°
Sheep.....	101-105°

SIMPLE BROOM RACK

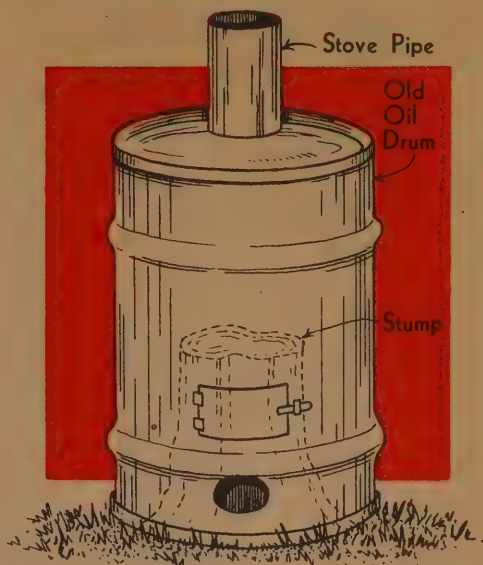
A great many devices have been originated for hanging a broom against the wall, but practically all of them leave a projection which may tear clothes. Here is one which eliminates that possibility, and makes hanging the broom out of the way a simple proposition. This holder is made from an old strap hinge which should be shaped as shown in the picture.

The large hole through which the broom handle slips should be about $\frac{1}{4}$ inch greater in diameter than the handle itself. After boring the hole, work down the rough edges with a rattail file.

Screw the strap to the wall at a convenient place, and at such a height that the handle can be slipped into the holder without allowing the broom itself to drag on the floor.



PORTABLE STUMP BURNER



Here is a simple portable rig which can be used to burn out stumps surely and safely. This is made from a 50-gallon oil drum as shown. A hole is cut in the top for a stove pipe and two others in the side, one of these large enough to permit inserting of kindling and the other for a draft. This hole should be about four inches in diameter and about the same distance from the bottom. A simple metal door should be put over the hole for kindling. The bottom of the barrel should be removed so the stove can be set over the stump and then banked up with a little earth around it. When this stove is used, a stump will burn almost as if you had put it in your furnace.

MECHANICAL HORSE POWER

A mechanical horse power is equal to 33,000 lbs. raised 1 foot in one minute, or its equivalent.

Example: What horse power will a 1,500 lb. horse, pulling $\frac{1}{10}$ of its weight deliver at two miles per hour?

$\frac{1}{10}$ of 1,500 equals 150 lb. pull. 150x 10,560 ft. (2 miles) equals 1,584,000 ft. lbs. in 60 min. 1 min. equals 26,400 ft. lbs. 26,400 divided by 33,000 equals $\frac{4}{11}$ H. P.

TEETH OF A HORSE AT VARIOUS AGES

(By Roberts from Bailey:
FARM AND GAR-
DEN RULE BOOK,
by permission of The
Macmillan Company,
Publishers)



1-2 Weeks Old



4-6 Weeks



8-10 Months



Milk Tooth



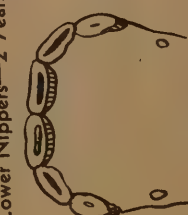
Lower Nippers—2 Years



Lower Nippers—3 Years



Side View—4 Years



Lower Nippers—4 Years



Lower Nippers—5 Years



Side View—8 Years



4 Years

9 Years

14 Years

20 Years

Cross section to show
shape of Incisor Tooth
at 4, 9, 14 and 20 years



Side View—7 Years



Lower Nippers—6 Years



Lower Incisor or Nipper
Teeth of an 8 Year Old



Lower Incisor Teeth
of an old horse →



Side View—5 Years



Side View—6 Years



Side View—
Old Horse



Showing at the upper end
the wearing away of the
cusps at 3, 4, 5, 6, 9, 20
years

CHAPTER VI

TABLES AND RULES

HOW TO FIGURE WEIGHT OF DAIRY CATTLE WITHOUT SCALES

Many balanced rations for dairy cattle are based on the live weight of the animals. Even though the majority of farmers do not have scales to weigh their cattle, they can estimate very closely by measurement of heart girth. Heart girth can be measured by placing an accurate tape measure around the animal, just behind the front legs. The animal should stand squarely on all four legs to give an accurate measurement. Fat cattle will run a little heavier than the figures indicated in the table, while the opposite is true of thin, run-down, scrawny animals.

Heart Girth	Estimated Live Weight	Heart Girth	Estimated Live Weight	Heart Girth	Estimated Live Weight
Inches	Pounds	Inches	Pounds	Inches	Pounds
25	76	48	354	71	1,027
26	80	49	374	72	1,069
27	84	50	394	73	1,111
28	89	51	414	74	1,153
29	95	52	434	75	1,197
30	101	53	456	76	1,241
31	108	54	478	77	1,285
32	118	55	501	78	1,331
33	128	56	526	79	1,377
34	138	57	552	80	1,423
35	148	58	579	81	1,469
36	158	59	607	82	1,515
37	168	60	637	83	1,561
38	180	61	668	84	1,607
39	192	62	700	85	1,653
40	208	63	732	86	1,699
41	224	64	766	87	1,745
42	240	65	800	88	1,791
43	257	66	835	89	1,837
44	275	67	871	90	1,883
45	294	68	908	91	1,929
46	314	69	947	92	1,975
47	334	70	987		

MILES TRAVELED IN PLOWING AN ACRE

Width of Furrow, Inches	Miles	Width of Furrow, Inches	Miles
10.....	9 ⁹ / ₁₀	14.....	7
11.....	9	15.....	6 ¹ / ₂
12.....	8 ¹ / ₄	16.....	6 ¹ / ₆
13.....	7 ¹ / ₂		

SUITABLE DISTANCES FOR PLANTING

Apples—Standard	30 to 40 feet apart each way
Apples—Dwarf (bushes)	10 " " " "
Pears—Standard	16 " 20 " " "
Pears—Dwarf	10 " " " "
Cherries—Standard	18 " 20 " " "
Cherries—Dukes and Morellos	16 " 18 " " "
Plums—Standard	16 " 20 " " "
Peaches	16 " 18 " " "
Apricots	16 " 18 " " "
Nectarines	16 " 18 " " "
Quinces	10 " 12 " " "
Currants	3 " 4 " " "
Gooseberries	3 " 4 " " "
Raspberries	3 " 5 " " "
Blackberries	6 " 7 " " "
Grapes	8 " 12 " " "

To estimate the number of plants required for an acre, at any given distance, multiply the distance between the rows by the distance between the plants, which will give the number of square feet allotted to each plant, and divide the number of square feet in an acre (43,560) by this number. The quotient will be the number of plants required.

CUT HAY AT BEST PROTEIN STAGE

INCREASE PROTEIN 2% AND EACH TON OF HAY WILL YIELD PROTEIN PREMIUM EQUAL TO 120 LBS. LINSEED MEAL

STAGE	Alfalfa		Red Clover	
	% Protein	Total Protein Per Acre Lbs.	% Protein	Total Protein Per Acre Lbs.
Bud	22.	1122	22.4	343
First bloom ..	20.	1033	21.1	418
50% bloom ..	18.8	1096	15.9	478
Full bloom ..	18.1	981	14.9	462
Just heading ...	9.2	249		
Fully headed ...	8.3	278		
Early bloom ...	7.2	272		
Past full	5.3	208		

Alfalfa— $\frac{1}{10}$ to $\frac{1}{4}$ bloom.

Clovers— $\frac{1}{2}$ to $\frac{3}{4}$ bloom.

Sweet Clover—just before blossom branches shoot.

Timothy—after heading but before blooming.

Brome and Reed Canary—soon after panicles appear.

TO ESTIMATE HUSKED EAR CORN IN CRIB

Take inside measurements in feet; then multiply length x breath x average depth. The result is total cubic feet.

For heavy grain, small cob corn, divide total cubic feet by 2.

• Good grain, medium cob, divide by $2\frac{1}{4}$.

Medium grain, medium cob, divide by $2\frac{1}{2}$.

Light grain, medium cob, divide by $2\frac{3}{4}$.

In some states where corn is stored without removing husk, divide total cubic feet by 3 for rough estimate on medium grade corn.

Explanation: Not so many years ago a yield of 50 bushels of corn to the acre was considered pretty good. At that time $2\frac{1}{2}$ cubic feet per bushel was accepted as an average standard. Today a yield of 50 bushels to the acre is not considered good at all. With this change a corresponding change was made in the standard. Now 2 cubic feet of solid husked corn when well settled is considered to measure one bushel of shelled corn.

NUMBER OF POUNDS TO THE BUSHEL

Alfalfa Seed.....	60	Grapes.....	40
Apples (Green).....	48	Hair (Plastering).....	8
Apples (Dried).....	24	Hemp Seed.....	44
Barley.....	48	Kafir Corn.....	56
Beans (White).....	60	Lime.....	80
Beans (Castor).....	46	Malt.....	38
Beans (Soy).....	60	Millet Seed, Common.....	50
Bran.....	20	Millet, Hungarian.....	48
Buckwheat.....	48	Oats.....	32
Blue-Grass Seed.....	14	Onions.....	57
Cherries.....	40	Orchard Grass.....	14
Clover Seed.....	60	Peaches (Dried).....	33
Clover (Sweet).....	60	Peas.....	60
Corn (Shelled).....	56	Potatoes.....	60*
Corn (In Ear).....	70	Potatoes (Sweet).....	50
Corn (Pop) (In Ear).....	70	Red Top Seed.....	14
Corn (Kafir).....	56	Rye.....	56
Corn Meal.....	50	Timothy Seed.....	45
Cranberries.....	32	Tomatoes.....	50
Coal, Hard.....	80	Turnips.....	55
Charcoal.....	20	Wheat.....	60
Coke.....	40	*Approximate. Legal weights may vary in different states.	
Flax Seed.....	56		

HOW TO FIGURE THE CAPACITY OF A SILO

If a silo is filled compactly, every fifty cubic feet of space will hold a ton of silage. By comparison a silo is much more economical than a barn, for it takes 400 cubic feet of space to store a ton of hay. It's easy to figure how much a silo holds by these rules.

Find the diameter of the silo. Multiply this number by itself. Multiply the result by 0.7854. This gives the floor area in square feet. Multiply the area by the height of the silo and you get the cubic feet. A cubic foot of silage weighs forty pounds. Multiply the capacity of the silo, (cubic feet) by 40 and you have the number of pounds the silo will hold. To find the number of tons, divide by 2,000.

Diameter	Depth	Capacity in Tons	Acres to Fill 15 Tons to Acre	Cows it Will Keep 6 Months 40 lbs. Daily
10	20	31	2 $\frac{1}{3}$	8
12	20	45	3	12
12	24	54	3 $\frac{3}{5}$	15
12	28	63	4 $\frac{1}{5}$	17
14	22	67	4 $\frac{1}{2}$	18
14	24	74	5	20
14	28	87	5 $\frac{2}{3}$	24
14	30	93	6	26
16	24	96	6 $\frac{2}{5}$	27
16	26	104	7	29
16	30	120	8	33
18	30	152	10 $\frac{1}{5}$	42
18	36	183	12 $\frac{1}{3}$	50

USEFUL INFORMATION

To find circumference of a circle multiply diameter by 3.1416.

To find area of a circle multiply square of diameter by .7854.

To find diameter of a circle multiply circumference by .31831.

To find surface of a ball multiply square of diameter by 3.1416.

To find side of an equal square multiply diameter by .8862.

To find cubic inches in a ball multiply cube of diameter by .5236.

A cubic foot of water contains 7½ gallons, 1,728 cubic inches, and weighs 62½ pounds.

Each nominal horse power of a boiler requires 30 to 35 pounds of water per hour.

To sharpen dull files lay them in diluted sulphuric acid until eaten deep enough.

Doubling the diameter of a pipe increases its capacity four times.

Double riveting is from 16 to 20 per cent stronger than single.

One cubic foot of anthracite coal weighs about 53 pounds.

One cubic foot of bituminous coal weighs from 47 to 50 pounds.

One ton of coal is equivalent to two cords of wood for steam purposes.

A gallon of water (U. S. Standard) weighs 8½ pounds and contains 231 cubic inches.

There are nine square feet of heating surface to each square foot of grate surface.

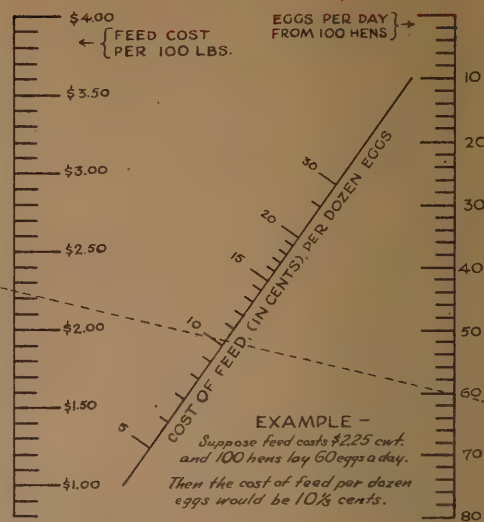
A horse power is equivalent to raising 33,000 lbs. 1 ft. a minute, 550 lbs. 1 ft. a second.

The average consumption of coal for steam boilers is 12 pounds per hour for each square foot of grate surface.

To find the pressure in pounds per square inch of a column of water multiply the height of the column in feet by .434.

Steam rising from water at its boiling point (212 degrees) has a pressure equal to the atmosphere (14.7 pounds to the square inch).

ESTIMATING THE COST OF FEED PER DOZEN EGGS



Chart, Courtesy E. I. Dupont de Nemours and Co. Inc.

Your profit is determined by the difference between the cost of production and your selling price. To estimate the feeding cost of each dozen eggs, use the chart given here. It is based on a flock of 100 hens. If you have more or less in your flock, use the chart and your cost will be in direct proportion to the number of hens in your flock and the number of eggs laid. For instance, if you have only 50 hens and they lay 30 eggs a day, your cost per dozen would be the same as 100 hens laying 60 eggs.

To use the chart, take the price you pay for feed, per hundred pounds and place a point on the left hand line. On the right hand line mark the number of eggs you get per hundred hens. Join these two points with a line. Where it intersects the diagonal line you'll find your cost per dozen eggs.

This chart will also tell you how many eggs your hens must lay in order to pay, if you know the feeding cost of eggs and your cost of feed. Join these figures and let the line extend through the right hand line. It will give you the number of eggs which should be laid by your flock. Feed Watkins Poultry Mineral Compound.

HAY HARVESTING CALENDAR

Type of Hay	First Cutting	Second Cutting	Remarks
Alfalfa	Cut at $\frac{1}{10}$ to $\frac{2}{3}$ bloom. Avoid letting hay get too coarse in years of heavy growth.	Cut at about half bloom. Don't let hay get dry and mature enough to shatter leaves.	Don't cut in September. Winter killing may result.
Red Clover	Cut when in full bloom and a few blossoms turning brown.	Second Cutting of Red Clover is often left for seed crop. Cut for seed when heads are brown and seeds have hardened.	If cutting second crop for seed, try to get first crop off early. Alsike Clover seed in first cutting. Usually no second cutting.
Alsike Clover and mixed hay			
Emergency Hay Crops	Boot Stage	Boot Stage	Consult your county agent.
Sudan Grass	Beans about half formed in pods, lower leaves still green. Oats in late stage. Oats in late milk stage.		
Soy Beans			
Oats and Peas			
Oats and Vetch			

LUMBER TABLE—BOARD FEET

Size in Inches	Lengths in Feet							
	10	12	13	14	16	18	20	22
1 x 2	$1\frac{2}{3}$	2	$2\frac{1}{6}$	$2\frac{1}{3}$	$2\frac{2}{3}$	3	$3\frac{1}{3}$	$3\frac{2}{3}$
1 x 3	$2\frac{1}{2}$	3	$3\frac{1}{4}$	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$
1x3 $\frac{1}{2}$	$2\frac{1}{12}$	$3\frac{1}{2}$	$3\frac{1}{24}$	$4\frac{1}{12}$	$4\frac{2}{3}$	$5\frac{1}{4}$	$5\frac{5}{6}$	$6\frac{5}{12}$
1 x 4	$3\frac{1}{3}$	4	$4\frac{1}{3}$	$4\frac{2}{3}$	$5\frac{1}{3}$	6	$6\frac{2}{3}$	$7\frac{1}{3}$
1 x 5	$4\frac{1}{6}$	5	$5\frac{5}{12}$	$5\frac{5}{6}$	$6\frac{2}{3}$	$7\frac{1}{2}$	$8\frac{1}{3}$	$9\frac{1}{6}$
1 x 6	5	6	$6\frac{1}{2}$	7	8	9	10	11
1 x 8	$6\frac{2}{3}$	8	$8\frac{2}{3}$	$9\frac{1}{3}$	$10\frac{2}{3}$	12	$13\frac{1}{3}$	$14\frac{2}{3}$
1 x 9	$7\frac{1}{2}$	9	$9\frac{3}{4}$	$10\frac{1}{2}$	12	$13\frac{1}{2}$	15	$16\frac{1}{2}$
1 x10	$8\frac{1}{3}$	10	$10\frac{5}{6}$	$11\frac{2}{3}$	$13\frac{1}{3}$	15	$16\frac{2}{3}$	$18\frac{1}{2}$
1 x12	10	12	13	14	16	18	20	22
1 x13	$10\frac{5}{6}$	13	$14\frac{1}{12}$	$15\frac{1}{6}$	$17\frac{1}{3}$	$19\frac{1}{2}$	$21\frac{1}{3}$	$23\frac{5}{6}$
1 x14	$11\frac{2}{3}$	14	$15\frac{1}{6}$	$16\frac{1}{3}$	$18\frac{2}{3}$	21	$23\frac{2}{3}$	$25\frac{2}{3}$
$\frac{5}{4}$ x 3	$3\frac{1}{8}$	$3\frac{3}{4}$	$4\frac{1}{16}$	$4\frac{3}{8}$	5	$5\frac{5}{8}$	$6\frac{1}{4}$	$6\frac{7}{8}$
$\frac{5}{4}$ x 4	$4\frac{1}{6}$	5	$5\frac{5}{12}$	$5\frac{5}{6}$	$6\frac{2}{3}$	$7\frac{1}{2}$	$8\frac{1}{3}$	$9\frac{1}{6}$
$\frac{5}{4}$ x 5	$5\frac{5}{24}$	$6\frac{1}{4}$	$6\frac{37}{48}$	$7\frac{7}{24}$	$8\frac{1}{3}$	$9\frac{5}{8}$	$10\frac{5}{12}$	$11\frac{11}{24}$
$\frac{5}{4}$ x 6	$6\frac{1}{4}$	$7\frac{1}{2}$	$8\frac{1}{8}$	$8\frac{3}{4}$	10	$11\frac{1}{4}$	$12\frac{1}{2}$	$13\frac{3}{4}$
$\frac{5}{4}$ x 8	$8\frac{1}{3}$	10	$10\frac{5}{6}$	$11\frac{2}{3}$	$13\frac{1}{3}$	15	$16\frac{2}{3}$	$18\frac{1}{2}$
$\frac{5}{4}$ x 9	$9\frac{3}{8}$	$11\frac{1}{4}$	$12\frac{1}{16}$	$13\frac{3}{8}$	15	$16\frac{7}{8}$	$18\frac{3}{4}$	$20\frac{5}{8}$
$\frac{5}{4}$ x10	$10\frac{5}{12}$	$12\frac{1}{2}$	$13\frac{13}{24}$	$14\frac{1}{12}$	$16\frac{2}{3}$	$18\frac{3}{4}$	$20\frac{5}{6}$	$22\frac{11}{12}$
$\frac{5}{4}$ x12	$12\frac{1}{2}$	15	$16\frac{1}{4}$	$17\frac{1}{2}$	20	$22\frac{1}{2}$	25	$27\frac{1}{2}$
2 x 3	5	6	$6\frac{1}{2}$	7	8	9	10	11
2 x 4	$6\frac{2}{3}$	8	$8\frac{2}{3}$	$9\frac{1}{3}$	$10\frac{2}{3}$	12	$13\frac{1}{3}$	$14\frac{2}{3}$
2 x 9	15	18	$19\frac{1}{2}$	21	24	27	30	33
2 x10	$16\frac{2}{3}$	20	$21\frac{2}{3}$	$23\frac{1}{3}$	$26\frac{2}{3}$	30	$33\frac{1}{3}$	$36\frac{2}{3}$
4 x 4	$13\frac{1}{3}$	16	$17\frac{2}{3}$	$18\frac{2}{3}$	$21\frac{1}{3}$	24	$26\frac{2}{3}$	$29\frac{2}{3}$

WEIGHTS AND MEASURES

TROY WEIGHT

24 grains.....	1 pwt.
20 pwts.....	1 ounce
12 ounces.....	1 pound

Used for weighing gold, silver and jewels.

APOTHECARIES' WEIGHT

20 grains.....	1 scruple
3 scruples.....	1 dram
8 drams.....	1 ounce
12 ounces.....	1 pound

The ounce and pound in this are the same as Troy Weight.

AVOIRDUPOIS WEIGHT

27 $\frac{1}{32}$ grains.....	1 dram
16 drams.....	1 ounce
16 ounces.....	1 pound
25 pounds.....	1 quarter
4 quarters.....	1 hundredweight
2,000 pounds.....	1 ton
2,240 pounds.....	1 long ton

DRY MEASURE

2 pints.....	1 quart
8 quarts.....	1 peck
4 pecks.....	1 bushel
36 bushels.....	1 chaldron

LIQUID MEASURE

4 gills.....	1 pint
2 pints.....	1 quart
4 quarts.....	1 gallon
31 $\frac{1}{2}$ gallons.....	1 barrel
2 barrels.....	1 hogshead

TIME MEASURE

60 seconds.....	1 minute
60 minutes.....	1 hour
24 hours.....	1 day
7 days.....	1 week
28, 29, 30 or 31 days.....	1 calendar month (30 days—1 month in computing interest)
365 days.....	1 year
366 days.....	1 leap year

CIRCULAR MEASURE

60 seconds.....	1 minute
60 minutes.....	1 degree
30 degrees.....	1 sign
90 degrees.....	1 quadrant
5 quadrants.....	12 signs
360 degrees.....	1 circle

LONG MEASURE

12 inches.....	1 foot
3 feet.....	1 yard
5 $\frac{1}{2}$ yards or 16 $\frac{1}{2}$ feet.....	1 rod
40 rods.....	1 furlong
8 furlongs or 5,280 feet.....	1 statute mile
3 miles.....	1 league

MARINER'S MEASURE

6 feet.....	1 fathom
120 fathoms.....	1 cable length
7 $\frac{1}{2}$ cable lengths.....	1 mile
5,280 feet.....	1 statute mile
6,080 feet.....	1 nautical mile
3 marine miles.....	1 marine league

MISCELLANEOUS

4 inches.....	1 hand
18 inches.....	1 cubit
21.8 inches.....	1 Bible cubit
2 $\frac{1}{2}$ feet.....	1 military pace

SQUARE MEASURE

144 square inches.....	1 square foot
9 square feet.....	1 square yard
30 $\frac{1}{4}$ square yards.....	1 square rod
40 square rods.....	1 rood
4 roods.....	1 acre
160 square rods.....	1 acre
640 acres.....	1 square mile
43,460 square feet.....	1 acre
6,272,640 square inches.....	1 acre

SURVEYORS' MEASURE

7.92 inches.....	1 link
25 links.....	1 rod
4 rods.....	1 chain
10 square chains or 160 square rods.....	1 acre
640 acres.....	1 square mile or section
36 square miles.....	1 township

CUBIC MEASURE

1,728 cubic inches.....	1 cubic foot
27 cubic feet.....	1 cubic yard
128 cubic feet.....	1 cord (wood)
40 cubic feet.....	1 ton (shipping)
2,150.42 cubic inches.....	1 standard bu.
231 cubic inches.....	1 standard gal.
1 cubic foot about $\frac{1}{4}$ of a bushel	

TO FIND THE INTEREST ON ANY SUM FOR ANY TIME

Point off two places from the right of the principal and multiply it by the number of months. One-half the result is the interest at 6 per cent. Deduct one-sixth for 5 per cent; one-third for 4 per cent; add one-sixth for 7 per cent; one-third for 8 per cent, etc.

TO FIND THE VALUE OF ARTICLES SOLD BY THE TON

Multiply the number of pounds by the price per ton, point off three places and divide by 2.

AVERAGE COST OF USING FARM MACHINERY

	1	2	3	4	5	6	7
Machine	Cost new	Average life in years	Repairs as percent of cost new	Annual cost		Cost per day } when	{ Days used per year
				Total	Per cent of cost new		
Tractor plow (2-16")	\$135.00	18	3.0	\$ 17.22	12.8	\$1.15	15
Tractor plow (3-16")	170.00	18	3.0	21.64	12.8	1.45	15
Disk harrow (15' single)	145.00	18	1.0	16.85	11.6	1.40	12
Spike-tooth harrow	45.00	20	1.5	4.45	9.9	.45	10
Field cultivator	140.00	15	1.5	18.51	13.2	1.30	14
Tractor cultivator 2 row	110.00	16	2.0	13.37	12.1	.90	15
Tractor cultivator 4 row	240.00	16	2.0	28.75	12.0	2.90	10
Grain drill tractor hitch							
10 foot	240.00	20	0.5	22.56	9.4	3.75	6
Corn planter 2 row	85.00	18	1.5	9.62	11.3	1.60	6
Mower 6 foot	95.00	18	3.0	12.17	12.8	1.20	10
Side delivery rake	125.00	18	1.0	15.85	12.7	2.65	6
Hay loader	140.00	18	1.0	14.94	10.7	1.85	8
Grain binder—(Tractor)	340.00	18	1.5	38.28	11.3	4.80	8
Corn binder 1 row—(Tractor)	340.00	18	1.0	35.02	10.3	5.85	6
Combine (6 foot							
Auxiliary Motor)	900.00	10	2.0	138.31	15.4	9.25	15
Corn picker 2 row	700.00	12	1.0	89.65	12.8	7.50	12
Ensilage cutter	325.00	15	2.0	39.88	12.3	5.70	7
Manure spreader	160.00	16	1.5	20.12	12.6	.80	25

(University of Minn. Extension Service U. S. Dept. of Agriculture)

HOW TO USE THE COST TABLE ABOVE

1. To find the cost per day of operating a machine or piece of equipment: Check figures in column 6 opposite the name of the machine.
2. Should your cost differ from the figure given in column 1, multiply your own "cost new" by the figure in column 5. The result is your annual cost. Break it down into daily cost by dividing by number of days per year the machine is used.

WEIGHT OF DAIRY PRODUCTS

Article	Specific gravity	Weight of gal. pounds	Weight of qt. pounds
Pure milk	1.000	8.342	2.085
Skim milk	1.036	8.642	2.160
Whole milk	1.032	8.609	2.152
20 per cent cream	1.022	8.525	2.131
24 per cent cream	1.009	8.417	2.104
30 per cent cream	1.001	8.350	2.087
40 per cent cream		8.220	2.055
50 per cent cream		8.112	2.028
Pure butterfat	0.910	7.591	1.898

WEIGHT TABLE—Per Cubic Foot

Pine, yellow	34	Earth, loose	94
Pine, white	34	Mortar	110
Ash	53	Mud	102
Oak, white, dry	54	Marble, Italian	169
Poplar	23	Marble, Vt.	165
Poplar, white	33	Water, salt	64
Walnut	41	Water, rain	62
Walnut, black	31	Ice	57½
Stone, common	158	Hay, baled	25
Sand, wet	128	Hay, pressed	25
Brick, common	102	Coal, Lackaw'a	60
Clay	120	Coal, Lehigh	56

GESTATION PERIODS OF FARM ANIMALS

The first column gives date of service. On the same line, under the different columns headed Mares, Cows, Ewes and Sows, is given the date the progeny may be expected from such service.

Time of Service	Mares 340 d'ys	Cows 283 d'ys	Ewes 150 d'ys	Sows 112 d'ys
Jan. 5	Dec. 6	Oct. 10	June 4	Apr. 26
Jan. 15	Dec. 16	Oct. 24	June 14	May 6
Jan. 25	Dec. 26	Nov. 3	June 24	May 16
Feb. 5	Jan. 6	Nov. 14	July 4	May 27
Feb. 15	Jan. 16	Nov. 24	July 14	June 6
Feb. 25	Jan. 26	Dec. 4	July 24	June 16
Mar. 5	Feb. 3	Dec. 12	Aug. 1	June 24
Mar. 15	Feb. 13	Dec. 22	Aug. 11	July 4
Mar. 25	Feb. 23	Jan. 1	Aug. 21	July 14
Apr. 5	Mar. 6	Jan. 12	Sept. 1	July 24
Apr. 15	Mar. 16	Jan. 22	Sept. 11	Aug. 4
Apr. 25	Mar. 26	Feb. 1	Sept. 21	Aug. 14
May 5	Apr. 5	Feb. 11	Oct. 1	Aug. 24
May 15	Apr. 15	Feb. 21	Oct. 11	Sept. 3
May 25	Apr. 25	Mar. 3	Oct. 21	Sept. 13
June 5	May 6	Mar. 14	Nov. 1	Sept. 24
June 15	May 16	Mar. 24	Nov. 11	Oct. 4
June 25	May 26	Apr. 3	Nov. 21	Oct. 14
July 5	June 5	Apr. 13	Dec. 1	Oct. 24
July 15	June 15	Apr. 23	Dec. 11	Nov. 3
July 25	June 25	May 3	Dec. 21	Nov. 13
Aug. 5	July 6	May 14	Jan. 1	Nov. 25
Aug. 15	July 16	May 24	Jan. 11	Dec. 4
Aug. 25	July 26	June 3	Jan. 21	Dec. 14
Sept. 5	Aug. 6	June 14	Feb. 1	Dec. 25
Sept. 15	Aug. 16	June 24	Feb. 11	Jan. 4
Sept. 25	Aug. 26	July 4	Feb. 21	Jan. 14
Oct. 5	Sept. 5	July 14	Mar. 3	Jan. 24
Oct. 15	Sept. 15	July 24	Mar. 13	Feb. 3
Oct. 25	Sept. 25	Aug. 3	Mar. 23	Feb. 13
Nov. 5	Oct. 6	Aug. 14	Apr. 3	Feb. 24
Nov. 15	Oct. 16	Aug. 24	Apr. 13	Mar. 6
Nov. 25	Oct. 26	Sept. 3	Apr. 23	Mar. 16
Dec. 5	Nov. 5	Sept. 13	May 3	Mar. 26
Dec. 15	Nov. 15	Sept. 25	May 13	Apr. 5
Dec. 25	Nov. 25	Oct. 3	May 23	Apr. 15

USEFUL INFORMATION

One-sixth of tensile strength of plate multiplied by thickness of plate and divided by one-half the diameter of boiler gives safe working pressure for tubular boilers. For marine boilers add 20 per cent for drilled holes.

To evaporate one cubic foot of water requires the consumption of $7\frac{1}{2}$ pounds of ordinary coal, or about 1 pound of coal to 1 gallon of water.

TO FIND THE CONTENTS OF BARRELS AND CASKS IN GALLONS

Rule—Multiply the square of the mean diameter in inches by the depth in inches and the product by .0034.

TO FIND NUMBER OF BOARD FEET IN A LOG

Subtract 4 inches from the diameter and square the remainder. The result will be the number of board feet in a 16-foot log. Add one-eighth for 18-foot logs, one-quarter for 20-foot logs. Subtract one-eighth for 14-foot logs, one-quarter for 12-foot logs.

CORDWOOD

A cord of wood is a pile 4 feet wide, 4 feet high and 8 feet long and contains (4x4x8) 128 cubic feet. To find the number of cords of wood in a pile, find the number of cubic feet by multiplying the length by the breadth by the height and divide by 128.

Example: How many cords of wood in a pile 4 feet wide, 8 feet high and 22 feet long?

4x8x22 equals 704 cubic feet. 704 cubic feet divided by 128 equals $5\frac{1}{2}$ cords.

GRAIN

To find the capacity of a bin or wagon bed multiply the number of cubic feet by .8. For greater accuracy, add one-third bushel for every 100 cubic feet.

Example: What is the capacity of a bin $6\frac{1}{2}$ feet wide, 8 feet high and 12 feet long?

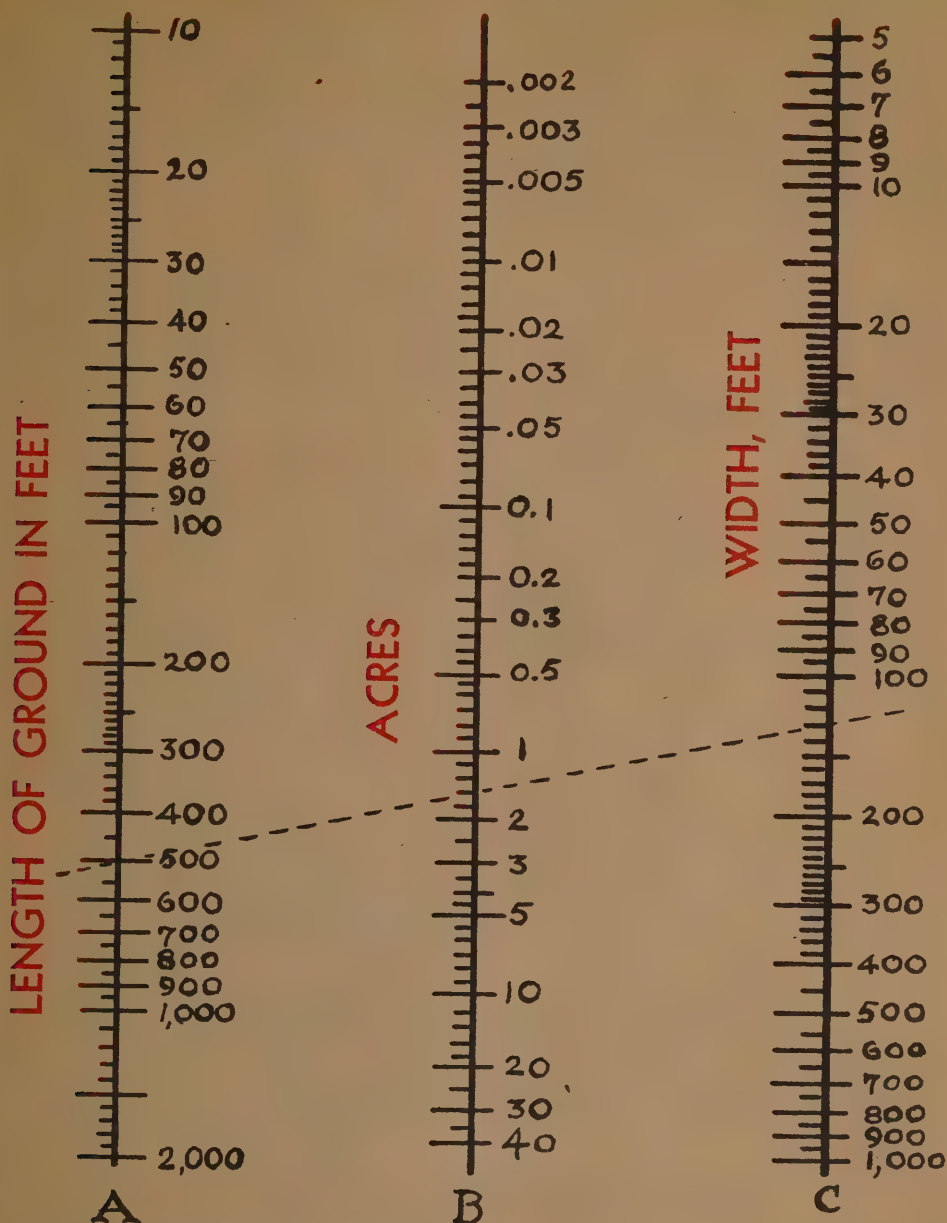
$6\frac{1}{2}$ x8x12 equals 624 cubic feet. 624x.8 equals 499.2 and 2 equals 501.2 bushels.

A wagon bed 3 feet wide and 10 feet long holds 2 bushels for every inch in depth.

WEIGHTS OF EVERYDAY THINGS

Barrel of flour weighs.....196 lbs.
Barrel of salt weighs.....280 lbs.
Barrel of pork weighs.....200 lbs.
Barrel of beef weighs.....200 lbs.

HOW TO ESTIMATE NUMBER OF ACRES IN A PLOT OF GROUND



For a quick, easy way to estimate the number of acres or parts of acres in a plot of ground, use the chart given here. The left hand column gives the length in feet ... the right, the width. Connect the figure for the length with that of the width by drawing a line across, or holding

a ruler in place. The place the line crosses the middle column gives the acreage.

Example: Suppose the plot you wish to estimate is 500 feet long and 130 feet wide. The line connecting these two figures cuts the center line at $1\frac{3}{4}$. That's your answer ... $1\frac{3}{4}$ acres.

FIGURING FARM LABOR COSTS

To the farmer who wants to know how to figure cost of labor on the different types of farm work done...how much to estimate per hour or per acre on such jobs as plowing, springtoothing, dragging, disking, drilling, etc., the following is offered as a basis. These figures should be revised somewhat to conform with farm labor costs under present conditions.

FOR PLOWING

Usually, a man with two horses can plow about two acres a day. Suppose you pay \$2.00 a day for the man's labor. (This may be low, but will serve as a basis.) Figure the horses at \$2.00 a day for a two horse team and you have a cost of \$4.00 per day, or \$2.00 per acre. Figure it this way and you have a cost of about 40 cents per hour for man and team. If this rate is low and you want to charge \$3.00 a day for the man, then your per hour figure would be 50 cents for man and team, not counting tools. (See machinery expense below.)

FOR SPRING-TOOTHING

If you are using a spring-tooth harrow six feet wide, figure about an hour per acre for man and two horse team. On the same rate per hour figured above, you can estimate a cost of 40 cents per acre.

DRAGGING

To some, this term is the same as spring-toothing, but, if a spike-tooth harrow is meant and a twelve foot harrow used, the rate per acre would be 20 cents.

DISKING

The average time required to disk an acre, using a six-foot disk is an hour and a quarter. Figuring a man and two horses, this would give a cost of 50 cents an acre. (\$2.00 a day for the man.)

DRILLING

As a standard for figuring cost, suppose a 7-foot drill is used, pulled by two horses. It would take about an hour to cover an acre. On the basis used above, this would give you a cost of 40 cents an acre.

HARVESTING WITH BINDER

The cost of harvesting with a binder varies naturally with the size of the machine and the number of horses needed to pull it. A 6-foot binder and a two-horse team will cut an average of 9.4 acres in ten hours. A three-horse team on the same rig will cut 10.1 acres. A 7-foot binder, pulled by two horses will cut 11.2 acres. The figure is the same for a three-horse team. If you use an 8-foot binder and three horses the rate would be 13 acres in 10 hours. From this you can easily figure the cost per hour.

The figures given above are for man and horse labor only. An added charge should be made for the plow, harrow or whatever tool is used. These run as follows, walking plow, 80 cents a day; spring-tooth harrow (3 section) 96 cents; disk, 75 cents; 7-foot grain drill \$3.60 and 8-foot grain binder \$5.40 a day. All of these figures include depreciation, repairs, interest on investment and housing.

AMOUNT OF BARBED WIRE REQUIRED FOR FENCES

	One Line	Two Lines	Three Lines
1 sq. acre.....	50 $\frac{1}{2}$ lbs.	101 $\frac{1}{2}$ lbs.	152 lbs.
1 sq. mile.....	1,280 lbs.	2,564 lbs.	3,840 lbs.
1 side of sq. mile.....	320 lbs.	640 lbs.	960 lbs.
1 rod in length.....	1 lb.	2 lbs.	3 lbs.
100 rods.....	100 lbs.	200 lbs.	300 lbs.
100 feet.....	6 $\frac{1}{16}$ lbs.	12 $\frac{1}{2}$ lbs.	18 $\frac{1}{16}$ lbs.

NUMBER OF SHRUBS OR PLANTS FOR AN ACRE

Distance Apart	No. of Plants	Distance Apart	No. of Plants	Distance Apart	No. of Plants
3 x3 inches	696,690	4 x 4 feet	2,722	13 x13 feet	257
4 x4 "	392,040	4½x 4½ "	2,151	14 x14 "	222
6 x6 "	174,240	5 x 1 "	8,712	15 x15 "	193
9 x9 "	77,440	5 x 2 "	4,356	16 x16 "	170
1 x1 foot	43,560	5 x 3 "	2,904	16½x16½ "	160
1½x1½ feet	19,360	5 x 4 "	2,178	17 x17 "	150
2 x1 "	21,780	5 x 5 "	1,742	18 x18 "	134
2 x2 "	10,890	5½x 5½ "	1,417	19 x19 "	120
2½x2½ "	6,960	6 x 6 "	1,210	20 x20 "	108
3 x1 "	14,620	6½x 6½ "	1,031	25 x25 "	69
3 x2 "	7,260	7 x 7 "	881	30 x30 "	48
3 x3 "	4,840	8 x 8 "	680	33 x33 "	40
3½x3½ "	3,555	9 x 9 "	537	40 x40 "	27
4 x1 "	10,890	10 x10 "	435	50 x50 "	17
4 x2 "	5,445	11 x11 "	360	60 x60 "	12
4 x3 "	3,630	12 x12 "	302	66 x66 "	10

WEIGHTS AND RULES

Weights, measures, etc., in this collection are approximate.

Atmospheric pressure at sea level equals 14.7 pounds per square inch, also equals 33.94 feet head of water.

1 cu. ft. of water weighs 62.4 lbs.

12.4 cu. ft. of air weighs 1 lb..

1 barrel contains 31 ½ gallons; kerosene barrel 50 gallons.

1 cu. ft. contains 7.48 gallons.

1 gal. of water weighs about 8 ⅓ lbs.

1 pint of water weighs about 1 lb.

1 cu. ft. sand weighs 90 to 110 lbs.

Broken stone weighs from 90 to 110 lbs. per cu. ft.

17 cu. ft. of clay weighs about 1 ton.

18 cu. ft. of gravel in bank weighs about 1 ton.

27 cu. ft. of gravel (dry) weighs 1 ton.

Lime weighs 75 lbs. per bushel.

Doubling the diameter of a pipe increases its capacity 4 times.

Pressure in pounds per square inch of a column of water equals the height of the column in feet multiplied by .434.

1 cu. ft. concrete weighs 144 lbs.

Steam rising from water at its boiling point (212 degrees) has a pressure equal to the atmosphere.

U. S. GOVERNMENT LAND MEASURE

A township—36 sections, each a mile square.

A section—640 acres.

A quarter section—half a mile square, 160 acres.

An eighth section—half a mile long, north and south, and a quarter of a mile wide—80 acres.

A sixteenth section—a quarter of a mile square—40 acres.

The sections are all numbered 1 to 36, commencing at the northeast corner.

The sections are divided into quarters, which are named by the cardinal points. The quarters are divided in the same way. The description of a forty-acre lot would read: The south half of the west half of the southwest quarter of section 1 in township 24, north of range 7 west, or, as the case might be, and sometimes will fall short and sometimes overrun the number of acres it is supposed to contain.

NOTE—In most of the Western states, where all of the land was laid out by the Government, all titles, except in city lots, are passed by description, as under the Government survey, and there a square of 6 miles, or 36 square miles, is one township.

ROOF ELEVATIONS

By the "pitch" of a roof is meant the relation which the height of the ridge above the level of the roof-plates bears to the span, or the distance between the studs on which the roof rests.

The length of rafters for the most common pitches can be found as follows from any given span:

If $\frac{1}{4}$ pitch, multiply by .559 or $\frac{7}{12}$ nearly

If $\frac{1}{3}$ pitch, multiply by .6 or $\frac{3}{5}$ nearly

If $\frac{2}{3}$ pitch, multiply by .625 or $\frac{5}{8}$ nearly

If $\frac{1}{2}$ pitch, multiply by .71 or $\frac{7}{10}$ nearly

If $\frac{5}{8}$ pitch, multiply by .8 or $\frac{4}{5}$ nearly

If full pitch, multiply by $\frac{1}{12}$ or 1.1-8 nearly

To length thus obtained must be added amount of projections of rafters at eaves.

As rafters must be purchased of even lengths, a few inches more or less on their lengths will make a difference to the pitch so slight that it cannot be detected by the eye.

Example: To determine the length of rafters for a roof constructed one-half pitch. with a span of 24 ft.—24x71—17.04; or, practically, just 17 feet. A projection of one foot for eaves makes the length to be purchased 18 feet.

TO DETERMINE AMOUNT OF PAINT REQUIRED FOR DIFFERENT SURFACES

Many variable factors prevent giving a rule regarding the amount of paint required for a certain surface, since the type of paint, the age and dryness of the wood or if some other surface, its roughness or smoothness must be considered. Consequently the following rule is only approximate.

Estimate the number of square feet of surface to be covered and divide this figure by 200. Your answer will be the number of gallons needed to put on two coats of liquid paint.

To find the number of pounds of pure ground lead to give the surface three coats, divide the number of square feet by 18.

LIME

2 barrels will plaster 100 square yards, one coat.

$3\frac{1}{2}$ barrels will plaster 100 square yards, two coats.

1 barrel will lay 1,000 brick, but must be good lime.

$\frac{1}{2}$ barrel will lay one perch of rubble stone.

2 barrels will lay one cord of rubble stone.

3 barrels will lay 100 cubic feet of wall.

GYPSUM PLASTER

800 pounds Gypsum Plaster will cover 100 square yards when mixed with 1,600 pounds sand or 1 part Gypsum Plaster and two parts sand.

PLASTER PARIS

$\frac{2}{3}$ barrel will hard finish 100 square yards.

HAIR

$1\frac{1}{2}$ bushels will do 100 square yards of plastering.

LATH

For 100 square yards 1,500 lath are required.

SAND

$\frac{5}{8}$ of a yard is required for every barrel of lime.

BRICK

Five courses of brick will lay one foot in height on a chimney; 6 bricks in a course will make a flue 4 inches wide and 12 inches long, and 8 bricks in a course will make a flue 8 inches wide and 16 inches long.

FIELD SEED PER ACRE

Crops	Average
Alfalfa, broadcast.....lbs.	20
Alfalfa, drilled.....lbs.	15
Barley.....bu.	1 $\frac{3}{4}$
Beans, field, small.....bu.	$\frac{3}{4}$
Beans, field, large.....bu.	1 $\frac{1}{4}$
Beets (not sugar).....lbs.	6
Blue grass.....bu.	1 $\frac{1}{4}$
Broom corn.....lbs.	6
Buckwheat.....bu.	1 $\frac{1}{4}$
Clover, alsike.....lbs.	8
Clover, Japan.....lbs.	15
Clover, mammoth.....lbs.	10
Clover, red, alone.....lbs.	10
Clover, red on grain.....lbs.	10
Clover, crimson.....lbs.	15
Corn, for grain.....lbs.	10
Corn, fodder.....lbs.	25
Cotton.....bu.	1
Cowpeas, for forage.....bu.	1 $\frac{1}{2}$
Cowpeas, in drill with corn.....bu.	$\frac{3}{4}$
Cowpeas, for seed.....bu.	$\frac{3}{4}$
Field peas, small.....bu.	1
Field peas, large.....bu.	1 $\frac{1}{4}$
Flaxseed.....lbs.	30
Oats.....bu.	2 $\frac{1}{3}$
Orchard grass.....lbs.	15
Peanuts.....bu.	1 $\frac{1}{4}$
Potatoes.....bu.	10
Rice.....bu.	2
Rye, for grain.....bu.	1 $\frac{1}{2}$
Rye, for forage.....bu.	2
Soy beans, drilled.....bu.	$\frac{3}{4}$
Soy beans, broadcast...bu.	1 $\frac{1}{4}$
Sugar beets.....lbs.	13
Sweet potato plants...No.	6,605
Timothy.....lbs.	10
Tobacco plants.....No.	5,000-6,000
Wheat.....bu.	1 $\frac{1}{2}$

HOW TO DISTRIBUTE FERTILIZER AT GIVEN RATE PER ACRE

A great many fertilizers carry specifications for application, indicating the number of pounds per acre. Just how to gauge this is often a problem. It may be the farmer will run short before he has finished drilling, or, by misjudging the amount to be used, will have a considerable amount left over.

To prevent either difficulty, we give here a table showing how much to sow per hundred feet. This offers a means of checking without covering a large area.

For example: If directions call for 600 pounds to the acre and rows are 28 inches apart, find the line under 600. Note where it intersects the column headed 28 inches. There you will find the figures, 3 pounds and 3 ounces. Set your drill to use that amount in 100 feet and your fertilizer will cover your entire area at the rate of 600 pounds per acre.

POUNDS OF FERTILIZER PER 100 FEET

DISTANCE BETWEEN ROWS (STALK TO STALK)							
POUNDS PER ACRE		28 in.	32 in.	34 in.	36 in.	40 in.	
		lb. oz.	lb. oz.	lb. oz.	lb. oz.	lb. oz.	
	200	1 1	1 4	1 5	1 6	1 8	
	300	1 8	1 13	1 15	2 1	2 5	
	400	2 2	2 7	2 10	2 12	3 1	
	500	2 11	3 1	3 4	3 7	3 13	
	600	3 3	3 11	3 14	4 2	4 9	
	800	4 4	4 14	5 3	5 8	6 2	
	1000	5 6	6 2	6 8	6 14	7 10	
	1500	8 0	9 3	9 12	10 5	11 7	
2000	10 11	12 4	13 —	13 12	15 4		

COMPOSITION OF FARM MANURES

	Produced Daily—lb.	Per cent Water	Pounds in a Ton		
			Ammonia	Phosphoric acid	Potash
Sheep	3.8	64	30	5	20
Horse	43.5	70	9-10	4-7	10-18
Cow	71.4	77	10	5-7	7-10
Steers	60	73	12-18	6-7	7-8
Hogs	9.3	73	10	6-8	10-12

WEIGHTS AND MEASURES OF COMMON FEEDS

In calculating rations it is usually necessary to use weights rather than measures. However, it is often easier to measure concentrates. The following table makes this possible:

FEED	Weight of 1 quart (approximate to ¼ pound)		Approximate weight of 1 bushel	
	Pounds	Pounds		
Alfalfa feed.....	¾	25		
Barley.....	1½	48		
Beet pulp (dried).....	½	19		
Brewers' grains (dried).....	½	19		
Buckwheat.....	1½	50		
Buckwheat bran.....	1	29		
Charcoal.....	½	20		
Corn, husked, ear.....		70		
Corn, cracked.....	1½	50		
Corn, shelled.....	1¾	56		
Corn meal.....	1½	50		
Corn-and-cob meal.....	1½	45		
Cotton seedmeal.....	1½	48		
Cowpeas.....	2	60		
Distillers' grains (dried).....	½	19		
Fish meal.....	1	35		
Gluten feed.....	1¼	42		
Linseed meal (old process)....	1	29		
Linseed meal (new process)....	1	35		
Meat scrap.....	1¼	42		
Molasses feed.....	¾	26		
Oats.....	1	32		
Oats, ground.....	¾	22		
Oat middlings.....	1½	48		
Peanut meal.....	1	29		
Rice bran.....	¾	26		
Rye.....	1¾	56		
Soybeans.....	1¾	62		
Tankage.....	1¼	40		
Velvet beans, shelled.....	1½	60		
Wheat.....	2	60		
Wheat bran.....	½	19		
Wheat middlings, standard....	¾	26		
Wheat screenings.....	1	32		

MILK PER POUND OF BUTTER

	Per cent	Lbs.	or Qts.
Milk testing.....	3.0	28.56	13.28
Milk testing.....	3.6	24.2	11.07
Milk testing.....	3.8	22.9	10.48
Milk testing.....	4.0	21.7	9.96
Milk testing.....	4.2	20.7	9.49

BUILDING INFORMATION NAILS—COMMON

Size.....	3d	4d	6d	8d	10d	12d
Length....	1¼	1½	2	2½	3	3¼
No. to Lb..	500	300	165	90	62	45
Size.....	16d	20d	30d	40d	50d	60d
Length....	3½	4	4½	5	5¼	6
No. to Lb..	35	24	18	13	10	8

SHINGLES REQUIRED IN A ROOF

Double the rafters and multiply by length of building. Multiply this by 9 if exposed 4 inches, by 8 if exposed 4¼ inches, and by 7½ if exposed 5 inches to the weather.

Laid 4 inches to the weather, 1,000 shingles will cover 100 square feet.

CORN

HILLS AND SHOCKS PER ACRE

Corn checked 3 ft. 4 in. apart, there are 3,920 hills to the acre.

10 hills square make 39.2 shocks to acre

12 hills square make 27.2 shocks to acre.

14 hills square make 20.0 shocks to acre.

Corn checked 3 ft. 6 in. apart, there are 3,555 hills to the acre.

10 hills square make 35½ shocks to acre.

12 hills square make 24⅝ shocks to acre.

14 hills square make 18 shocks to acre.

Corn checked 3 ft. 8 in. apart there are 3,240 hills to the acre.

10 hills square make 32.4 shocks to acre.

12 hills square make 22.5 shocks to acre.

14 hills square make 16.5 shocks to acre.

HAY IN MOW

Measurement gives only the approximate amount of hay in a mow, since the amount varies considerably with the kind, and the length of time the hay has had a chance to settle.

For example: Good timothy hay when well settled runs about a ton to 350 cubic feet of space. If it is only partly settled it will take from 400 to 500 cubic feet. New hay requires 500 cubic feet and over to the ton.

LIVE STOCK ON FARMS IN THE U. S.

Source: U. S. Department of Agriculture

The figures below omit the last three numerals in order to save space. For example, the number of all cattle in the United States on Jan. 1, 1890 was 60,014,000. Add three noughts to all figures below.

Year	All Cattle	Milk Cows	Hogs	Sheep	Horses and Mules
On Jan. 1	1,000	1,000	1,000	1,000	1,000
1890.....	60,014	15,000	48,130	44,518	18,054
1900.....	59,739	16,544	51,055	48,105	20,995
1910.....	58,993	19,450	48,072	50,239	24,211
1915.....	63,849	20,270	56,600	40,513	26,493
1920.....	70,400	21,455	60,159	40,743	25,742
1925.....	63,373	22,575	55,770	38,543	22,569
1930.....	61,003	23,032	55,705	51,565	19,124
1931.....	63,030	23,820	54,835	53,233	18,468
1932.....	65,801	24,896	59,301	53,902	17,812
1933.....	70,280	25,936	62,127	53,054	17,337
1934.....	74,369	26,931	58,621	53,503	16,997
1935.....	68,846	26,082	39,066	51,808	16,683
1936.....	67,847	25,196	42,975	51,087	16,226
1937.....	66,098	24,649	43,083	51,019	15,802
1938.....	65,249	24,466	44,525	51,210	15,245
1939.....	66,029	24,600	50,012	51,595	14,792
1940.....	68,197	24,926	61,115	52,399	14,481
1941.....	71,461	25,478	54,256	54,283	14,136
1942.....	75,162	26,398	60,377	56,735	13,720
1943.....	78,170	26,940	73,660	55,089	13,390

Horses in 1943 numbered 9,678,000; mules, 3,712,000

PER ACRE RATE OF SEEDING PRINCIPAL CROPS

Corn: 8-10 lbs., (silage 8-14 lbs.); Oats: 1½-2½ bu.; Barley: 1-2½ bu.; Wheat: 1½-2 bu.; Rye, 1-2 bu.; Soybeans: ½-1½ bu.; Buckwheat: ¾-1½ bu.; Millet: 30-40 lbs.; Pea Beans, 40 lbs.; Sorghum: 2-4 lbs.; Potatoes, 15-20 bu.; Sugar Beets: 16-18 lbs.

Recommended Seeding Mixtures for Hay

(1) Alfalfa alone, 7-10 lbs. (2) Red clover, 6 lbs.; alsike, 3 lbs.; timothy, 3 lbs. (3) Alfalfa, 8 lbs.; smooth brome grass, 5 lbs.

Emergency Hay: Sudan grass, 15 to 25 lbs. per acre.

For Pastures

Sweet soils, well-drained: (1) Alfalfa, 8 lbs.; smooth brome grass, 5 lbs. (2) Red clover, 6 lbs.; timothy, 4 lbs.; Kentucky bluegrass, 2 lbs.; white clover, 1 lb.

Fairly moist meadows: Red clover, 3 lbs.; alsike, 3 lbs.; red top, 2 lbs.; Timothy, 4 lbs.

Poorly-drained areas: Canary grass, 5 lbs.; red top, 2 lbs.

\$500⁰⁰ In Prizes

FOR FARM HINTS

We offer \$1.00 each for 500 usable farm hints sent in by readers of this offer. We want good practical hints along the lines of those shown in this book, to be published in future issues of the Watkins Farm Hints and Rules Book. Naturally, the hints sent in must not have been previously published.

Don't worry about grammar, spelling or punctuation. We will take care of that if we print the hint. We will also fix up any sketch or drawing. We are interested in the idea only and prizes will be awarded for those hints that are deemed by the judges to be the most practical, helpful and useful to farmers. We will pay \$1.00 for each hint accepted—a total of \$500.00 in prizes.

There's no limit to the number of hints you can submit. Our Farm Hints Editor and his committee of judges will pay a dollar for each hint chosen. Their decision is final. If more than one person sends in the same hint and such hint is accepted, the full prize will be given to each person.

All Hints become the property of The J. R. Watkins Company and will not be returned. The starting date is November 1, 1944. The time limit for mailing hints is midnight July 1, 1945. Don't wait until then—start sending in your farm hints at once and see how many dollar bills you can win. Address them to—

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Lotion for Hands and Skin	☐	Shaving Cream, Brushless	☐		
Make-Up	☐	Shave, Liquid	☐		
Perfume	☐	Shaving Soap	☐		
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Garda	☐
Iodide	☐
Lavender Complexion	☐
Mary King	☐
Pine Tar	☐
Pumisope	☐
Sanisope	☐

CLEANSERS

Cleanser	☐
Granular Soap	☐
Hand Cleanser	☐
Washing Compound	☐

HOUSEHOLD AIDS

All Duty Polish	☐
Cleaner, Liquid	☐
Disinfectant	☐
Household Fly Sprayer	☐
Liquid Wax	☐
Machine Oil	☐
Metal Polish	☐
Moth Crystals	☐
Pencils	☐

INSECTICIDES

Antiseptic Powder	☐
Bug Powder	☐
Cryolite Insect Dust	☐
Dry Insecticide (Dry Dip)	☐
Fly and Moth Spray	☐
Fly Spray	☐
Fly Sprayer	☐
Insect Dust	☐
Insecticide, Dip and Disinfectant (Stock Dip)	☐
Louse Killer	☐
Pheno. Emulsion	☐
Pheno. Powder	☐
Plant Dust	☐
Rat Killer	☐
Roost Paint	☐
Victory Garden Insect Dust	☐

MINERAL COMPOUNDS

Hog	☐
Poultry	☐
Stock	☐

VETERINARY PREPARATIONS

Cattle Grub Powder	☐
Mange Oil	☐
Poultry Inhalant	☐
Poultry Wormer	☐
Tonaphysic	☐
Veterinary Salve	☐

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*That Means
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Watkins Grade AA Fly Spray kills and repels stable, horn and horse flies, mosquitoes, gnats, moths, etc.; ants, roaches, bedbugs, spiders, fleas, mites in coops, etc. It is stainless, sweet smelling and doesn't taint milk. It costs you less than most sprays because it goes further.



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